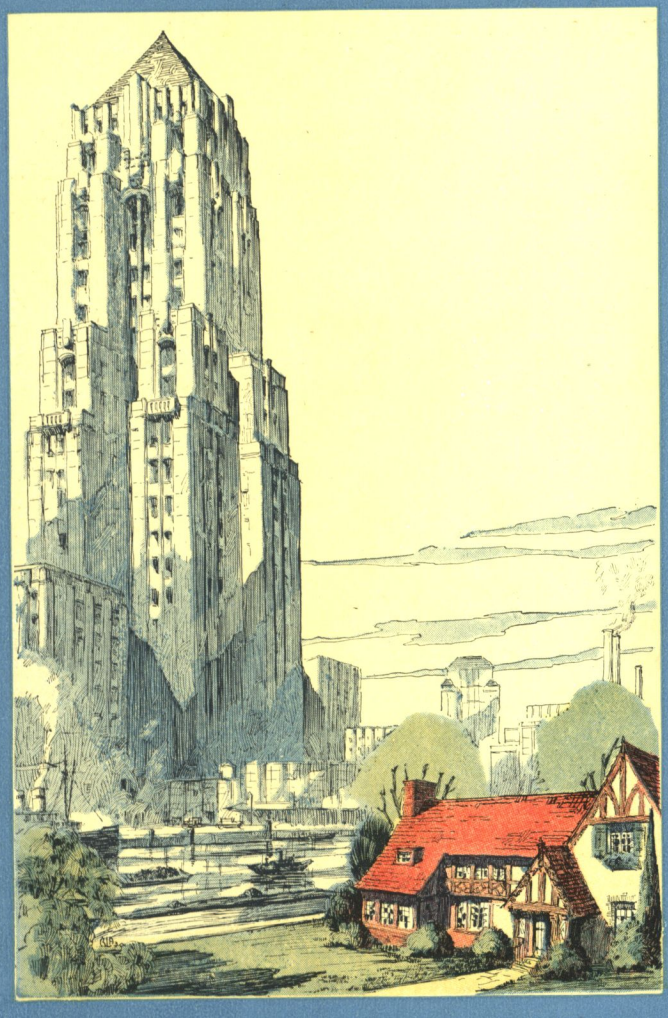
420 Lexington Ave
Phone Mohawk 4-4311



Fenestra

BLUE BOOK OF STEEL WINDOWS

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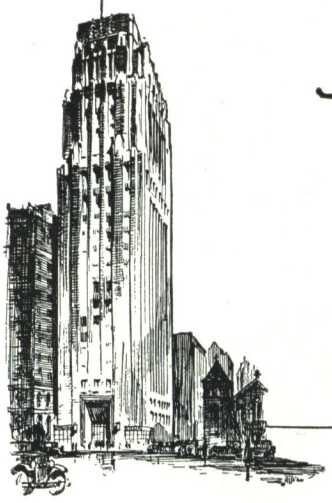

Fenestra
WINDOWS OF STEEL

DETROIT STEEL PRODUCTS COMPANY

Factories: Detroit, Michigan, Cleveland, Ohio and Oakland, California
General Offices: 2250 East Grand Boulevard, Detroit, Michigan
Local Offices in 217 Cities

FENESTRA ARCHITECTURAL SERVICE

TO ASSIST the architect in visualizing Fenestra Windows as they actually will appear in the building he is designing, Detroit Steel Products Company maintains an Architectural Service Department with architects trained in the correct use of Fenestra in monumental structures.

Without charge or obligation to you, this department will be glad to work up drawings showing exactly how Fenestra Windows may be detailed into the type of construction you are using and made to harmonize with your own architectural design.

The plate on the next page gives an idea of the work of this department.

It has been our privilege to work with some of the largest architects in the country with very gratifying results. Sometimes we are able to indicate a saving through the use of standard types. Almost always there are problems of appearance, arrangement of ventilators, amount of light or ventilation, on which our knowledge of steel window application to architectural requirements is helpful.

The men in the Architectural Service Department all know how to use a pencil. They talk an architect's own language. They are not salesmen. Their service is available for the asking. A word to your local Fenestra representative or to the Home Office at Detroit will enlist their immediate co-operation.

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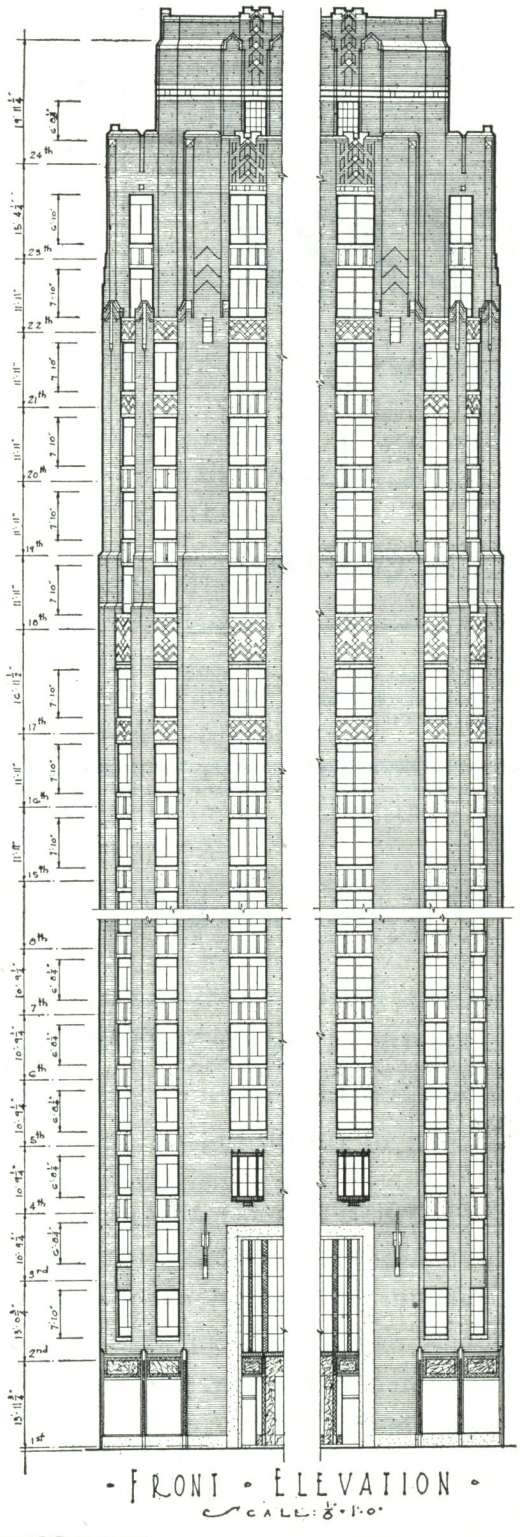

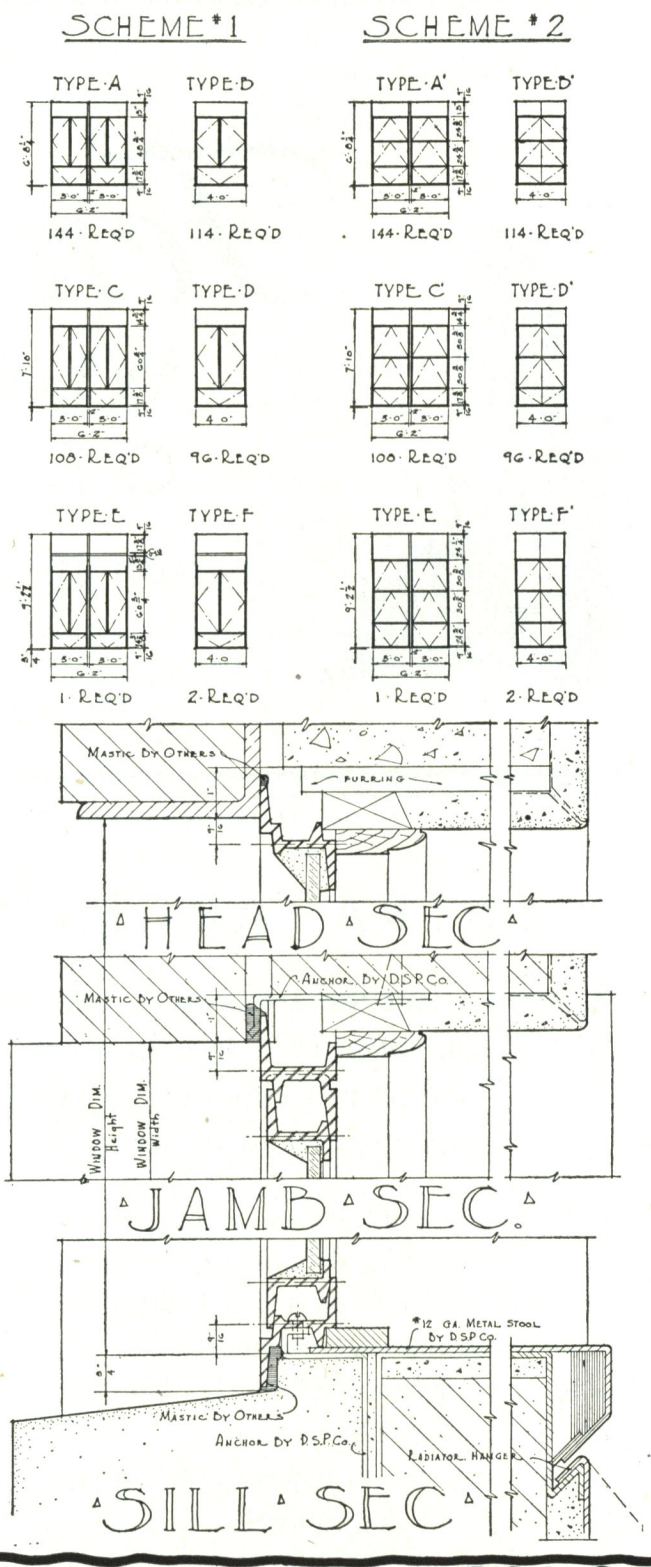

Fenestra 1930

TYPICAL DETAILS AS PREPARED BY ARCHITECTURAL SERVICE DEPT.

Fenestra 1930

Continued on next page

FENESTRA "FENMARK" WINDOWS

A series of solid section, steel windows with swing leaves opening out and a sill ventilator opening in at the top while sliding up from the bottom. Ornamental hardware of polished bronze. Friction, extension hinges. Designed for use in monumental and public buildings of the highest type. No Fenestra screens

SPECIFICATIONS

For nomenclature of individual types refer to standard drawings or price sheets obtainable from local Fenestra representatives.

Notes are explanatory and need not be included in specifications.

GENERAL

All windows shall be Fenestra Fenmark Windows as manufactured by the Detroit Steel Products Company.

MATERIAL

SECTIONS shall be specially designed, hot rolled, individually straightened, solid steel bars with heavy fillets in all re-entrant angles, designed for exterior glazing.

FRAME MEMBERS—Jamb members shall be heavy unequal leg sections designed for adequate anchorage. Head, sills and horizontal intermediate bars shall be Z sections with offset baffles.

SWING LEAF AND SILL VENTILATOR MEMBERS shall be Z-shaped sections with baffles.

JAMB WEATHERING (at sill ventilator) shall be offset unequal leg channels forming beveled, interior, sliding-shoe grooves.

MUNTINS shall be T sections.

MULLIONS shall be exterior and interior plates secured by bolts and acorn nuts.

TRANSOM BARS shall be standard Fenestra—1 (Z bars and angles). 2 (angle and channel sections with interior pressed steel mullion covers).

(Note:—Other designs of mullions and transom bars may be used. If desired, provisions for them should be made in the ornamental iron or structural steel specifications.)

CONSTRUCTION

FRAMES including intermediate bars shall be mortise and tenon, air hammer riveted and electrically welded at all corners. All exposed faces at welds shall be ground to a smooth finish.

SWING LEAVES AND SILL VENTILATORS shall be mitered and electrically welded at all corners and exposed faces at all welds shall be ground smooth. Provide continuous two-point flat contact weathering between swing leaves and frame.

MUNTINS, when required, shall be continuous from head to sill and from jamb to jamb, interlocked to increase strength and rigidity at points of intersection. Joints at frame shall be mortise and tenon, air hammer riveted.

MULLIONS OR TRANSOM BARS shall be provided between units where two or more windows are placed side by side or one above another in the same opening.

(Note:—Specify as above when manufacturer is to supply steel mullions or transom bars.)

HEAD DRIP—Provide a continuous, heavy electro-galvanized steel head drip above all swing leaves.

(Note:—Drip is shipped unattached. See installation details.)

SILL AND JAMB ANCHOR CLIPS—Supply (sill) (jamb) anchor clips with bolts to attach to frame where required.

ATTACHED HARDWARE

(Note:—Attach at the factory.)

SWING LEAF HINGES—All side hung swing leaves shall be hung on two heavy, extension (cleaning), friction hinges of special solid rolled, sherardized steel with heavy fillets in re-entrant angles. Each hinge shall be equipped with two die cast friction washers. Washers and hinge members shall be held by lock washers and a bronze stud with acorn nut so arranged that friction may be increased or decreased by adjusting the nut.

(Note:—"Close In" hinges standard on all types with adjacent swing leaves.)

SWING LEAF LOCKING HANDLE BRACKET—Each side hung open-out swing leaf shall have an ornamental locking handle bracket of solid rolled steel, electrically welded into the swing leaf stile.

(Note:—Locking handle brackets for Fenmark Casements are attached at the factory.)

Continued on next page

SILL VENTILATOR OPERATING HARDWARE—Sill ventilators shall swing in from the top while sliding up from the bottom and shall be so constructed that by tilting they may be easily washed from inside of the building. Each ventilator shall be balanced on two supporting arms of solid spring steel. Connections between the supporting arms and window frame and between supporting arms and ventilator shall be made by steel brackets rigidly supported and double riveted to the vertical members. Arms shall be attached to brackets by bronze shoulder pivots. Each ventilator shall be equipped with two bronze friction shoes sliding vertically in the weathering channels of the window frame.

STRIKES—All handles for vertical swing leaves shall lock against painted brass strikes attached to the casement frame.

KEEPER—All handles for sill ventilator shall lock into malleable iron keepers rigidly attached to the casement frame.

DETACHED HARDWARE

(Note:—All detached hardware shall be shipped carefully packed to prevent damage until applied for use.)

SWING LEAF AND SILL VENTILATOR LOCKING HANDLES—Provide for each side hung swing leaf and each sill ventilator solid bronze cam locking handles (U. S. Government specification) of ornamental design and coinage finish obtained without the use of plating or chemicals. Swing leaf handle No. 1119. Ventilator handle No. 1122.

Each handle to be equipped with a concealed coil spring, to take up wear and prevent rattle, and attached to the leaf stile or the ventilator rail by three bronze screws.

SWING LEAF OPERATING HARDWARE—(1) Standard.

(Note:—Friction hinges without operator are standard.)

(2) Optional—Solid bronze thumb screw operator, No. 1101, with non-friction hinges.

(Note:—No. 2 at extra cost over No. 1.)

(Note:—Bronze multiple locking device, where necessary, at added cost.)

(Note:—Bronze finger pull, No. 1130, furnished at extra cost at sill of each swing leaf when specified.)

PROJECTED OUT TRANSOM HARDWARE—Provide for each open-out transom, one solid bronze locking handle, No. 914, to attach at the sill and one solid bronze pole ring, No. 151, to attach at the head. (See Plate G-101.)

MASTIC

The window manufacturer shall furnish sufficient mastic to form a weathertight union between window frames and mullions or transom bars. No caulking by window manufacturer for head, sill or jambs.

ERECTION

(Note:—Include in the masonry specifications that all windows shall be caulked at head, sill and jambs with mastic or other caulking compound to be supplied and applied by the general contractor, to form a weathertight union between the window frames and the building construction.)

(Note:—Include in the masonry specifications that all masonry openings shall be accurately constructed in accordance with standard Fenestra installation details so that windows may be erected after masonry is completed.)

(Note:—Include in the masonry specifications that all mortar grouting, pointing, etc., shall be done by the mason contractor after the windows have been erected.)

All Fenestra Fenmark Windows shall be erected in prepared openings by the Fenestra Construction Company under a separate contract.

All windows shall be set plumb and true, properly aligned and securely anchored and all ventilators properly adjusted before glazing.

Standard Fenestra sill anchors shall be used in all cases. Standard Fenestra jamb anchor clips, No. 822, to be used as necessary.

Apply all hardware in accordance with manufacturer's directions. Detached hardware shall not be applied until after windows are erected and painted and the building is plastered.

PAINTING

All windows shall be given one dip coat of gray lead and oil paint by the manufacturer before shipment.

(Note:—The following should be provided for in the painting specifications: "One additional coat of paint should be applied after erection, before glazing. Painting contractor shall apply one field coat of paint before erection, to all parts of window which cannot be painted after erection." Further painting should be deferred until at least three weeks after glazing to allow putty to set. One or more additional coats may then be applied as required.)

(Note:—Where desired, the Fenestra Construction Company, at reasonable added cost, will do field painting after erection. If required, so specify here, including specification for paint and its application.)

GLASS AND GLAZING

(Note:—The following should be included in the glass and glazing specifications: "Glass shall be (⅛" light plate) (¼" thick plate)." Single or double strength glass is not recommended.

"Putty shall be steel sash putty." This is a special, high grade putty which insures quick setting. Ordinary wood window putty must not be used.)

All windows shall be glazed from the outside. All glass shall be set in a bed of putty and secured by copper plated steel spring glazing clips furnished by the window manufacturer. Face putty should be applied in a neat, clean-cut, smooth manner.

SHADING

(Note:—All shades must be located at least 2½" from the inside face of the window to clear hardware.)

(Note:—Each Fenmark Window is drilled at both jambs near the head for attachment of standard shade bracket clips which are supplied at slight added cost. These clips are of sufficient depth to bring the shade bracket to the proper position and are slotted to accommodate any standard shade bracket. If shade bracket clips are required, so specify.)

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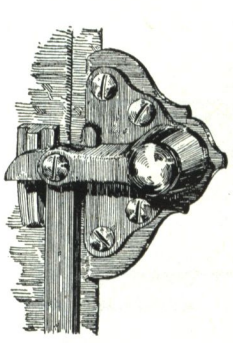
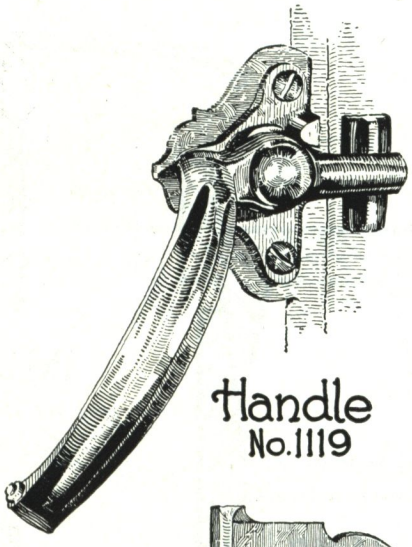
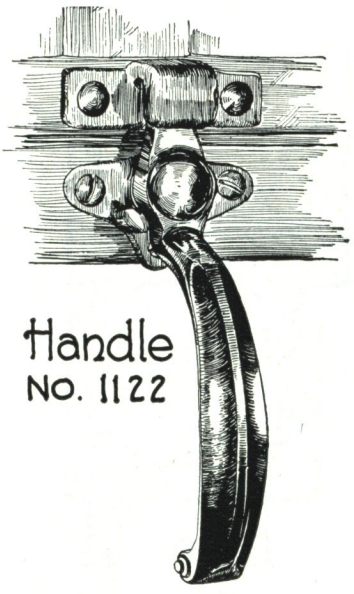




Handle
No. 1119



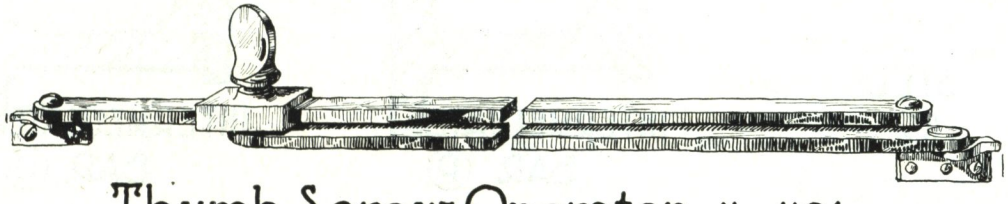
Handle
No. 1122

Multiple
Locking Device

Handle
No. 1115

Finger Pull
No. 1130

Thru-Screen Operator - No. 1116



Thumb Screw Operator - No. 1101

Fenestra
1930

FENMARK WINDOWS
HARDWARE

Plate No
G-404

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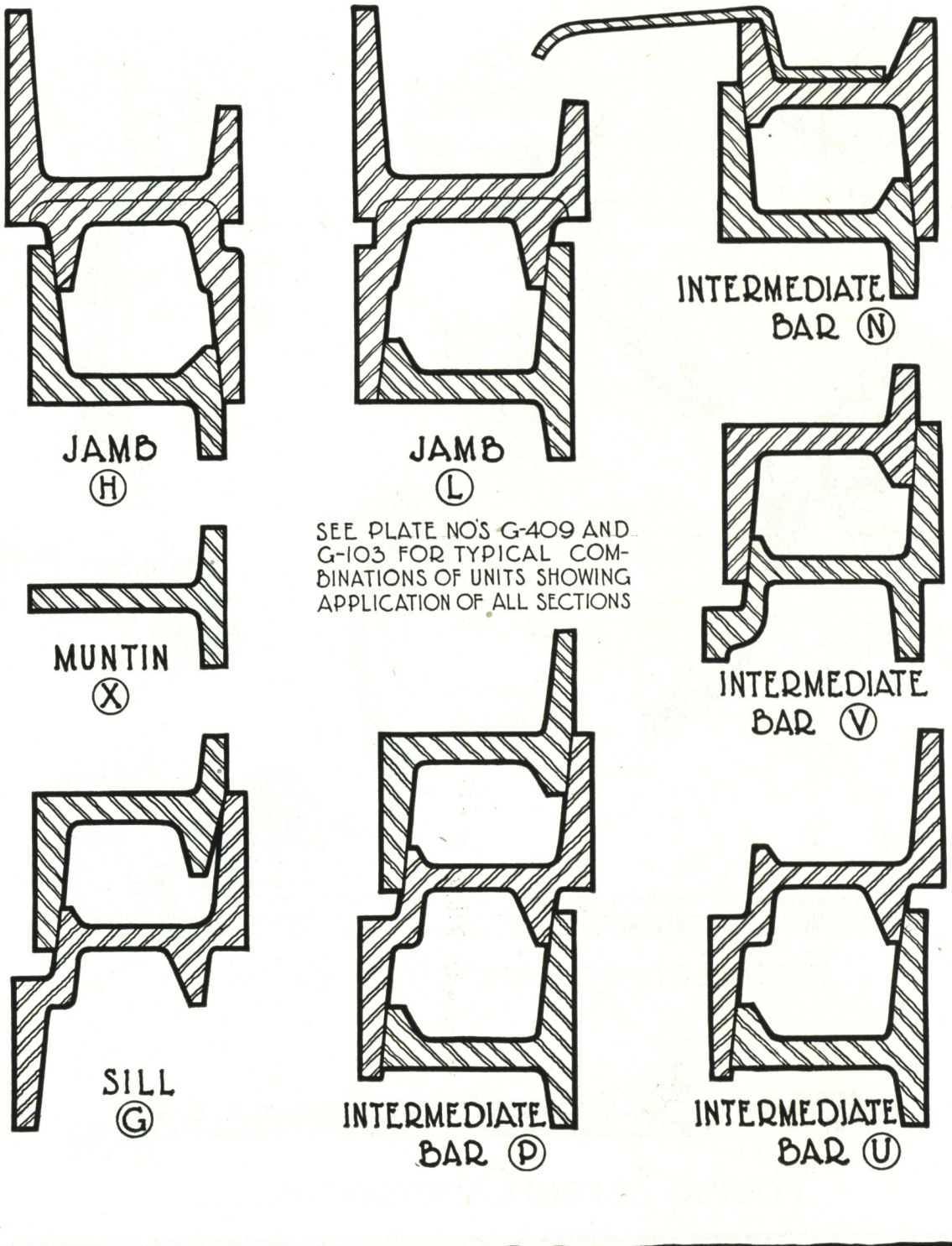

Fenestra 1930

FENMARK WINDOWS
FULL SIZE SECTIONS

Plate No G-405

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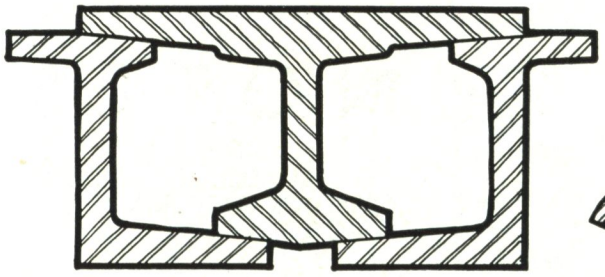
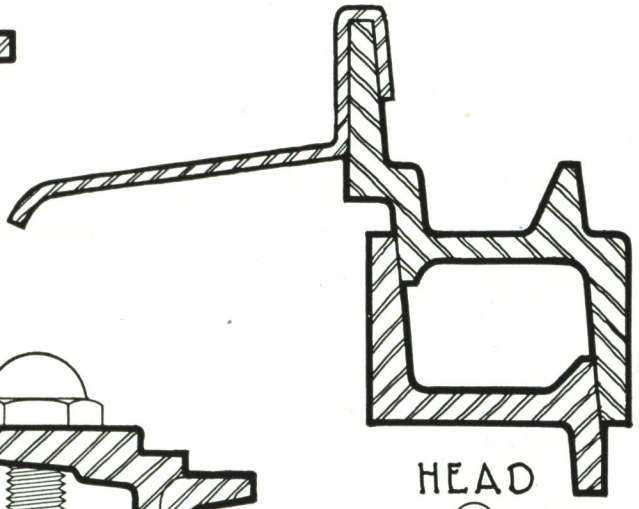
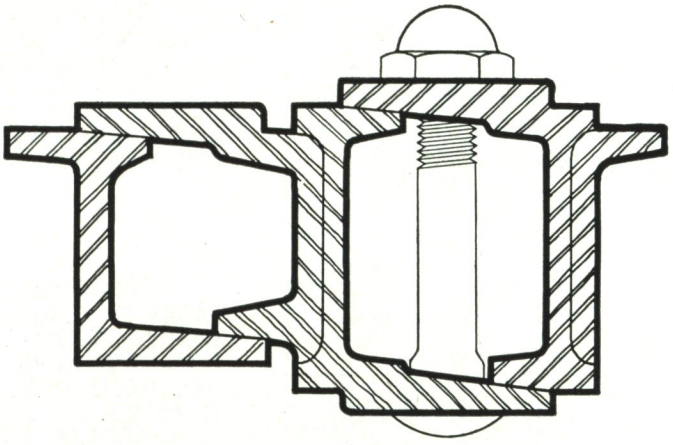


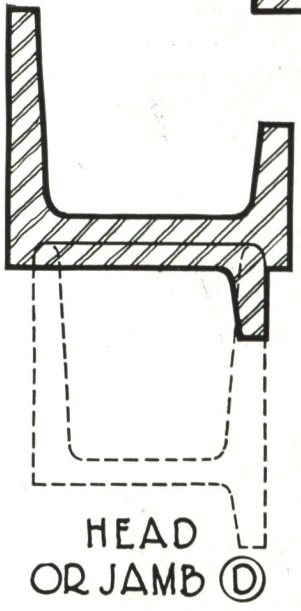
MEETING RAIL (K)



HEAD (M)

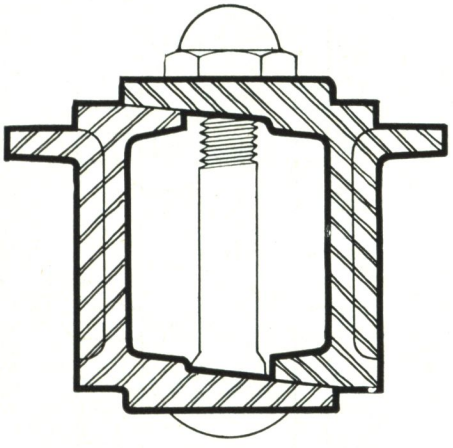


MULLION (J)

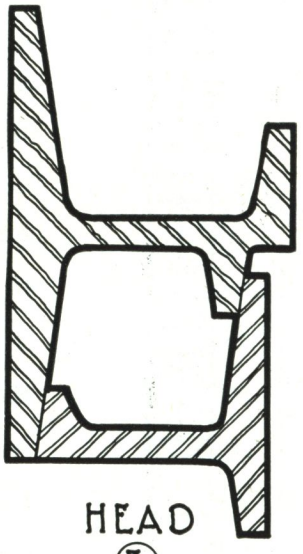


HEAD OR JAMB (D)

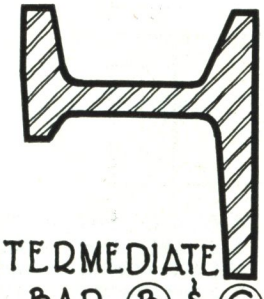
DOTTED SECTION SHOWS SUGGESTED METHOD OF MAINTAINING SIGHT LINE AT JAMB ~ ~ WILL BE FURNISHED AS AN EXTRA IF SPECIFIED



MULLION (S)



HEAD (E)



INTERMEDIATE BAR (B) & (C)

Fenestra 1930

FENMARK WINDOWS
FULL SIZE SECTIONS

Plate No. G-406

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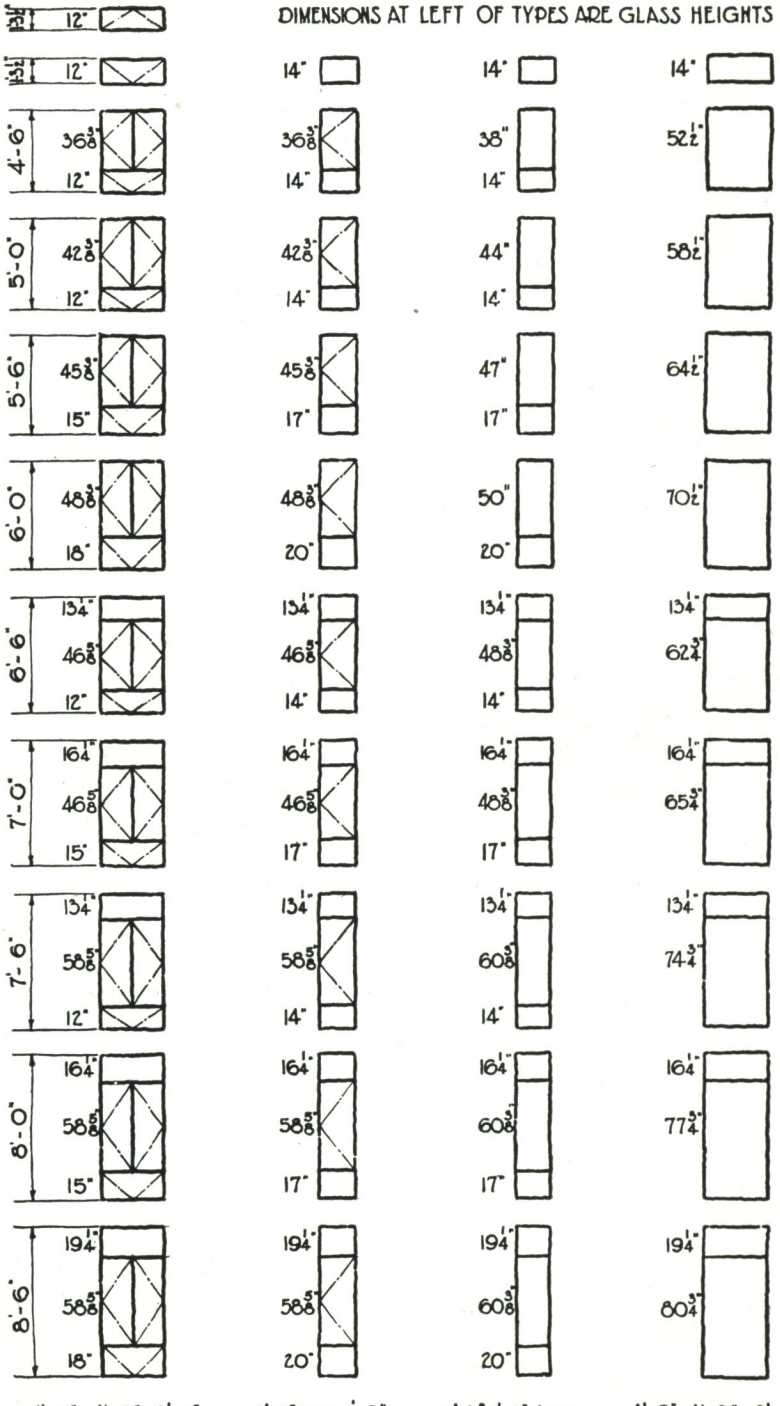


4'-6", 4'-0", 3'-6" 3'-0" AND 2'-6" ARE STD. WIDTHS FOR TYPES SHOWN

2'-0" AND 1'-6" ARE STANDARD WIDTHS FOR TYPES SHOWN

2'-0", 1'-6" AND 1'-0" ARE STD WIDTHS FOR TYPES SHOWN.

4'-6", 4'-0", 3'-6" 3'-0" AND 2'-6" ARE STD WIDTHS FOR TYPES SHOWN

NOTES

FULL SIZE SECTIONS ARE FOUND ON PLATE NO'S G-405, G-406

ALL FENMARK WINDOW DIMENSIONS ARE EQUAL TO THE CLEAR OPENING

FRAME MEMBERS PROJECT BEYOND THESE ON ALL FOUR SIDES FOR ANCHORAGE IN BUILDING CONSTRUCTION.

WIDTH OF BARS "F" AND "T" SHOWN ON PLATE NO. G-409 MUST BE ADDED TO OVER-ALL SIZE WHEN COMBINED UNITS ARE USED WITHIN MASONRY OPENING.

SECTION "F" IS LIMITED TO OPENINGS UP TO 9'-0" IN WIDTH

SECTIONS "J", "R" AND "S" ON PLATE NO. G-409 SHOW HOW UNITS MAY BE COMBINED WITHOUT USE OF PLATE MULLION, AND MUST BE SPECIFIED IF DESIRED.

HANDING OF WINDOWS IS DETERMINED BY LOCATION OF HINGE VIEWED FROM OUTSIDE

RIGHT HAND CASEMENT LEAVES ARE HINGED AT RIGHT AND LEFT HAND CASEMENT LEAVES ARE HINGED AT LEFT.

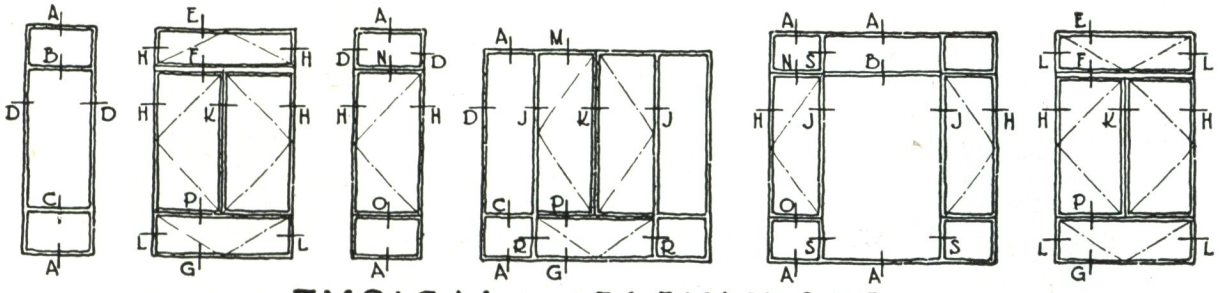
AT EXTRA COST ALL TYPES MAY BE FURNISHED WITH MUNTINS IF DESIRED

Fenestra 1930

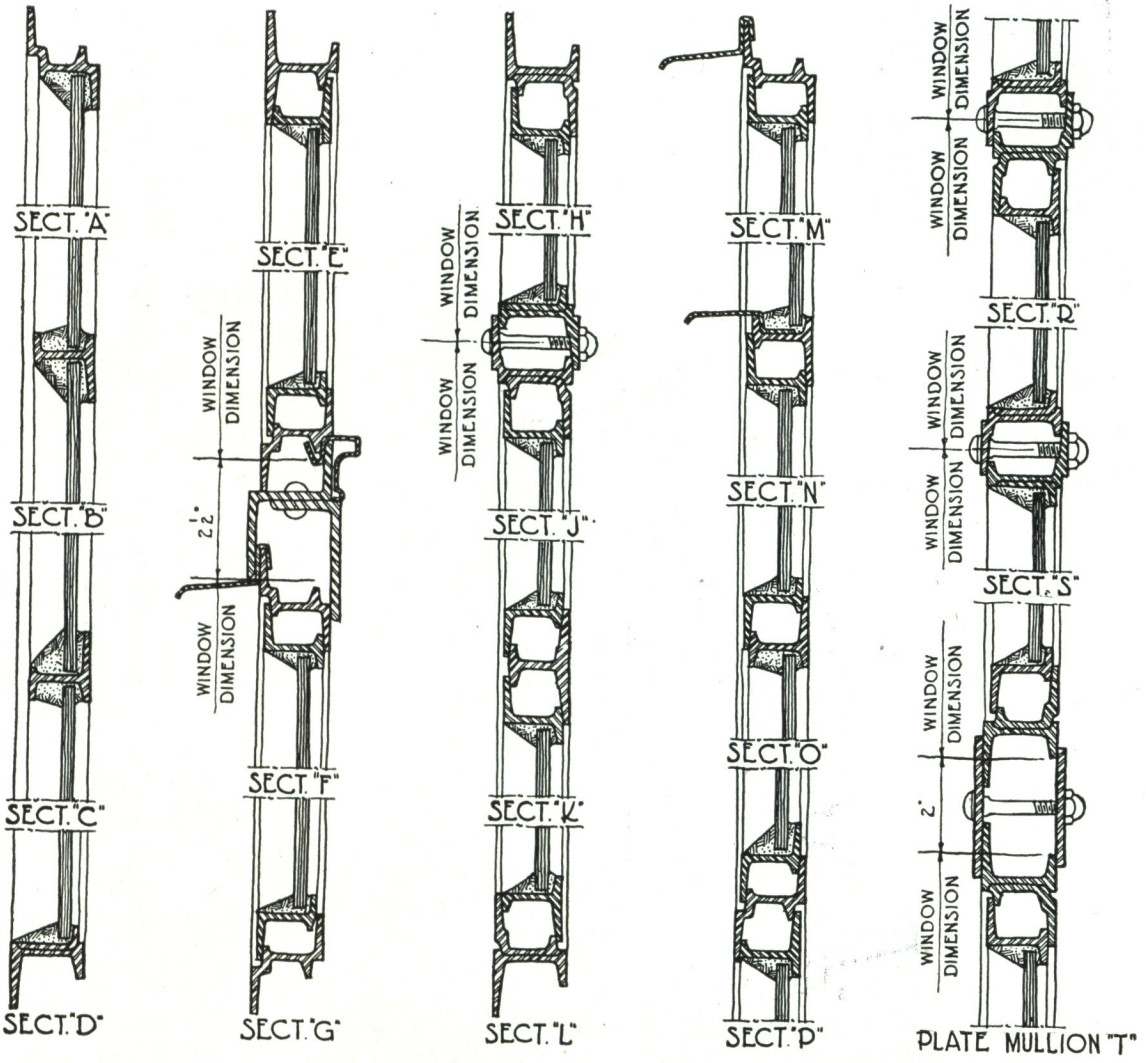
FENMARK WINDOWS TYPES AND SIZES

Plate No G-408

Continued on next page



TYPICAL ELEVATIONS



NOTE: DETAILS ON THIS PLATE ALSO APPLY TO SCREENED FENMARK WINDOWS.

Fenestra 1930

FENMARK WINDOWS
COMBINATION DETAILS

Plate No G-409

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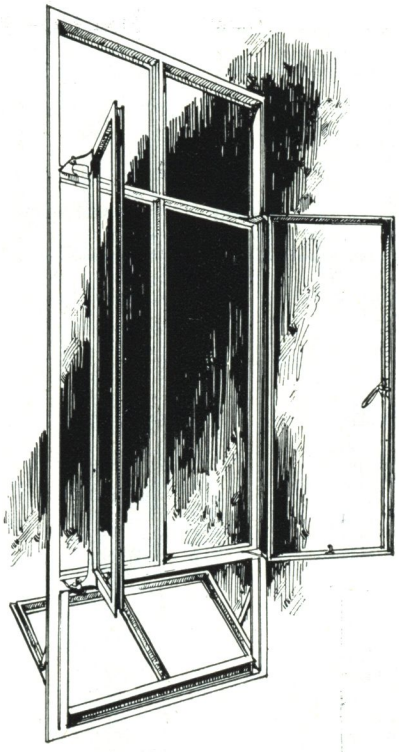
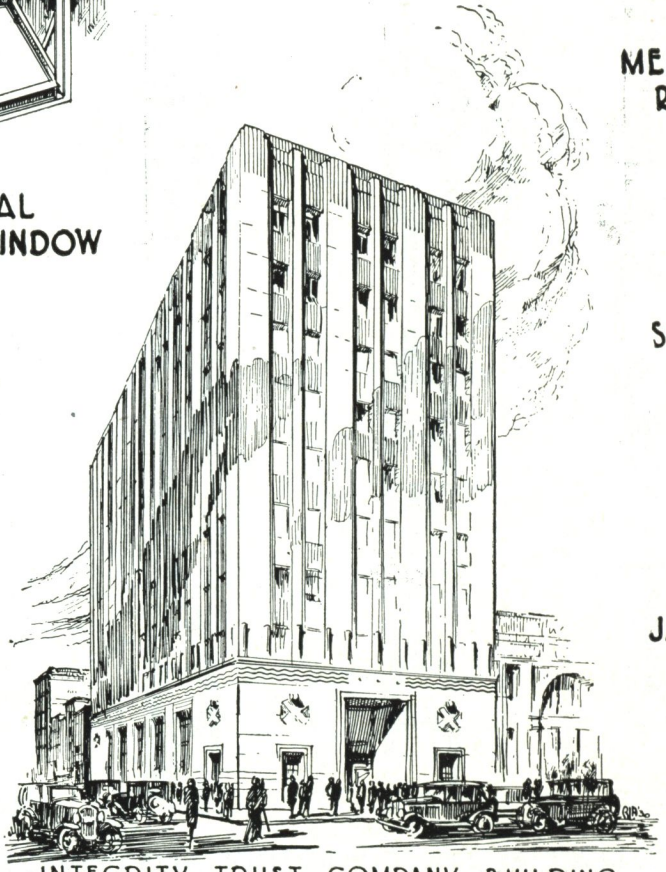


TYPICAL
FENMARK WINDOW

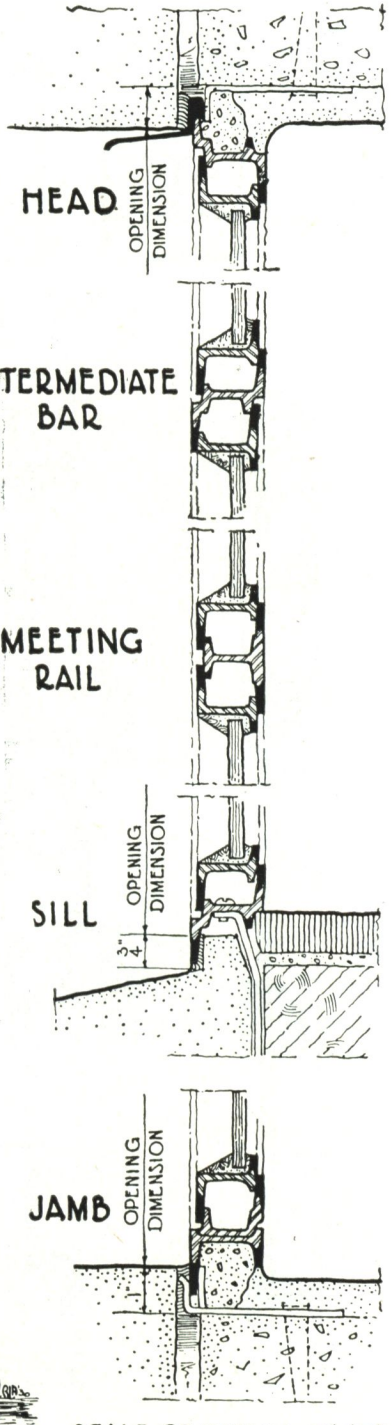
NOTES

CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS

SECTIONS ON THIS PLATE ARE "M", "P", "K", "G" AND "H" AS SHOWN ON PLATES NUMBERS G-405, G-406



INTEGRITY TRUST COMPANY BUILDING
PAUL P. CRET - ARCH'T. PHILADELPHIA, PA.



SCALE OF DETAILS - 3"-1'-0"

Fenestra 1930

FENMARK WINDOWS
STONE INSTALLATION

Plate No G-411

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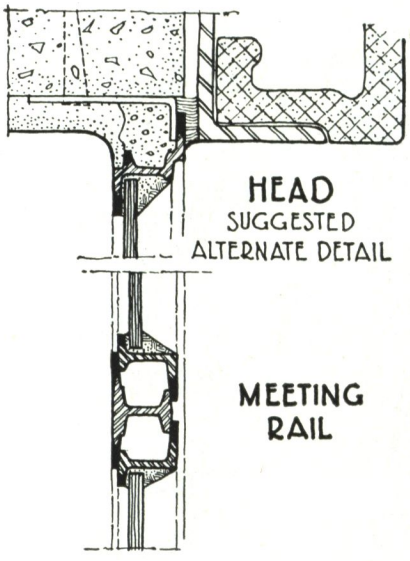
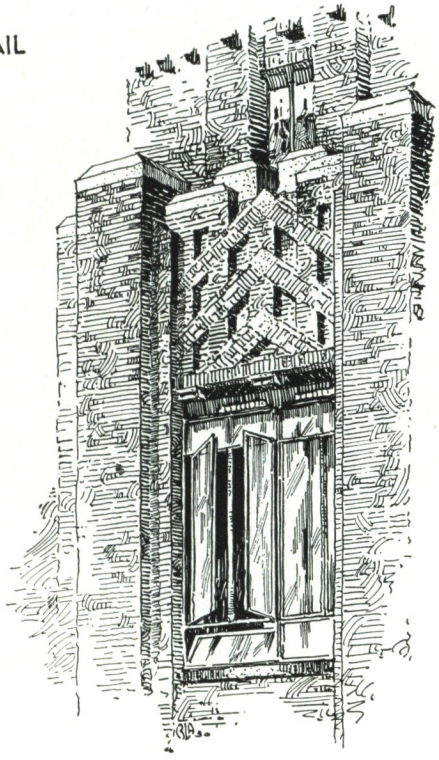
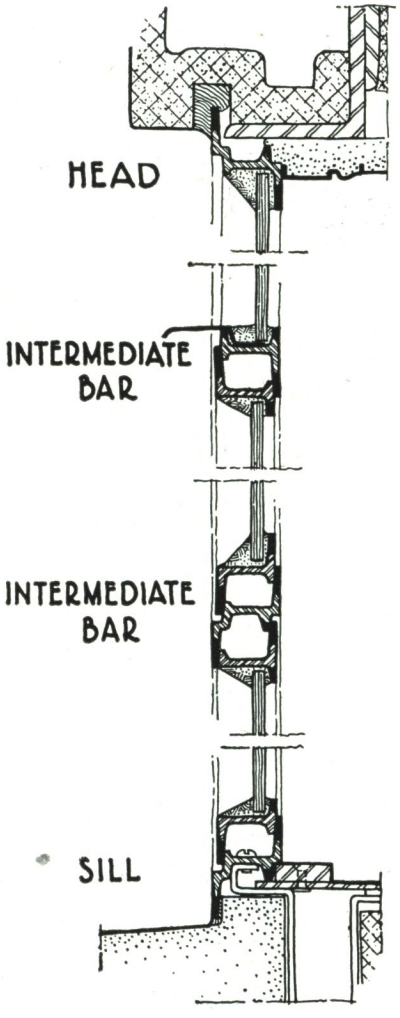
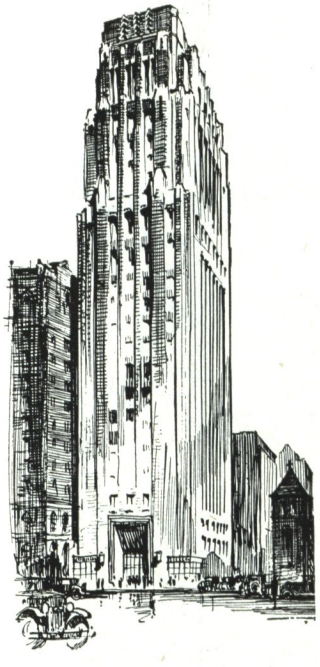


CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS

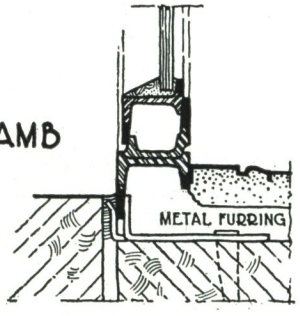






SECTIONS ON THIS PLATE ARE "A", "N", "P", "G", "H" AND "K" SHOWN ON PLATES NUMBERS G-405, G-406

ARCHITECTS BUILDING
PHILADELPHIA - PENNA
BISSEL & SINKLER - BOYD, ABEL & GUGERT
A.H. BROCKIE - I.T. CATHERINE - P.P. CRET
FOLSOM & STANTON - E.B. GILCHRIST
R.H. JOHNSON - G.I. LOVATT - R.R. McGOODWIN
RANKIN & KELLOGG - H. STERNFELD - THOMAS,
MARTIN & KIRKPATRICK - F.R. WATSON
C.E. WUNDER - ZANTZINGER, BORIE & MEDARY
ASSOCIATED ARCHITECTS



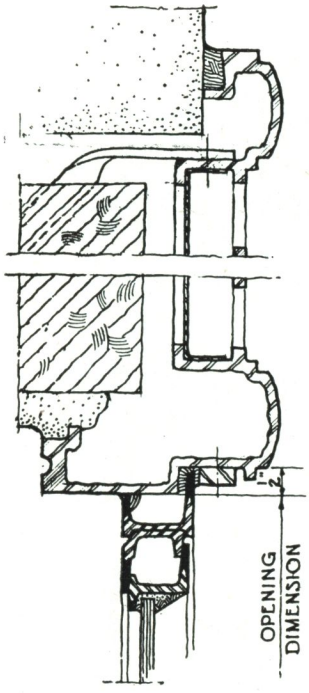
SCALE OF DETAILS - 3"-1'-0"

Fenestra 1930

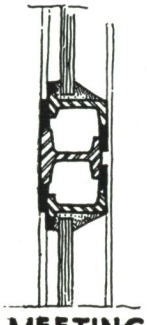
FENMARK WINDOWS
TERRA COTTA INSTALLATION

Plate No G-412

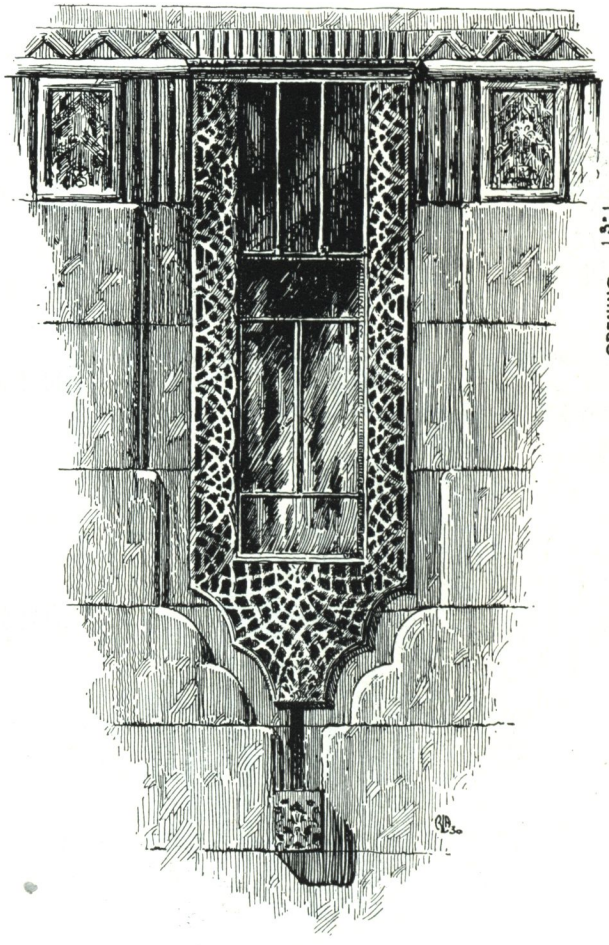
Continued on next page

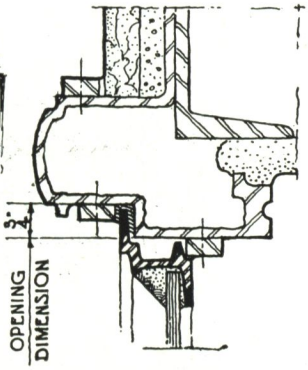


JAMB

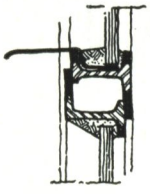


MEETING RAIL

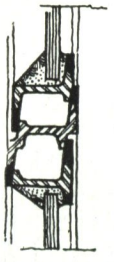




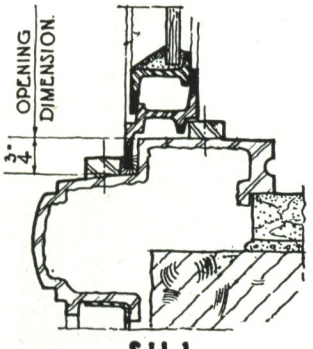
HEAD



INTERMEDIATE BAR



INTERMEDIATE BAR

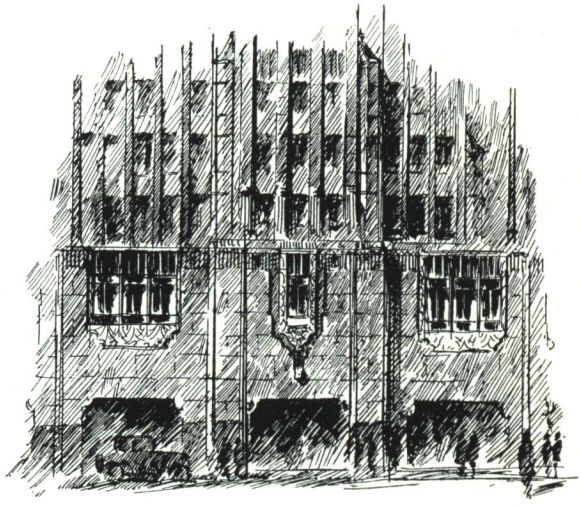


SILL

SCALE OF DETAILS - 3"=1'-0"

CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS.

SECTIONS ON THIS PLATE ARE "H", "K", "A", "N", "P" AND "G" AS SHOWN ON PLATES NUMBERS G-405, G-406

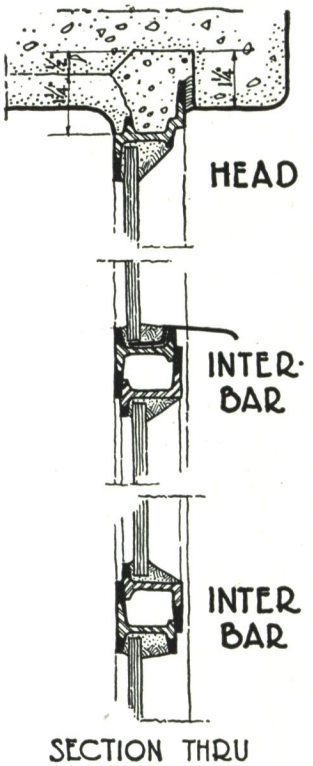


Fenestra 1930

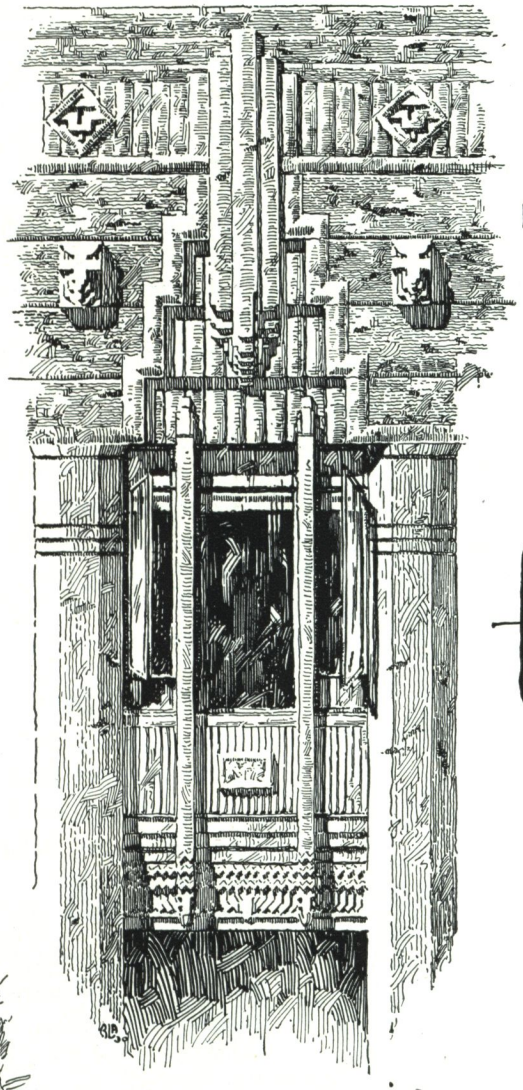
FENMARK WINDOWS
METAL FRAME INSTALLATION

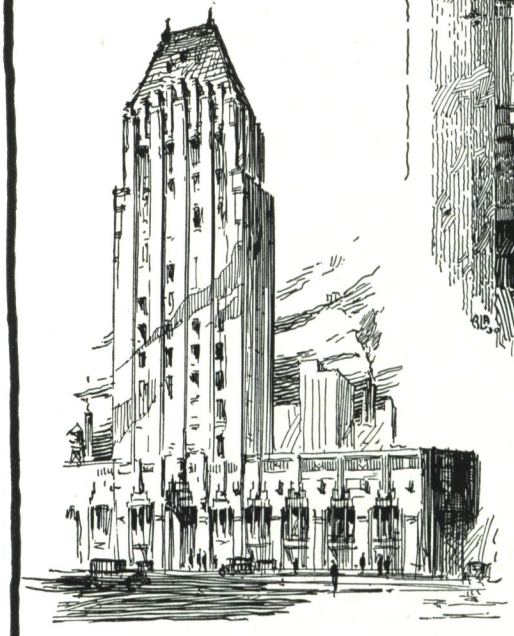
Plate No G-413

Continued on next page



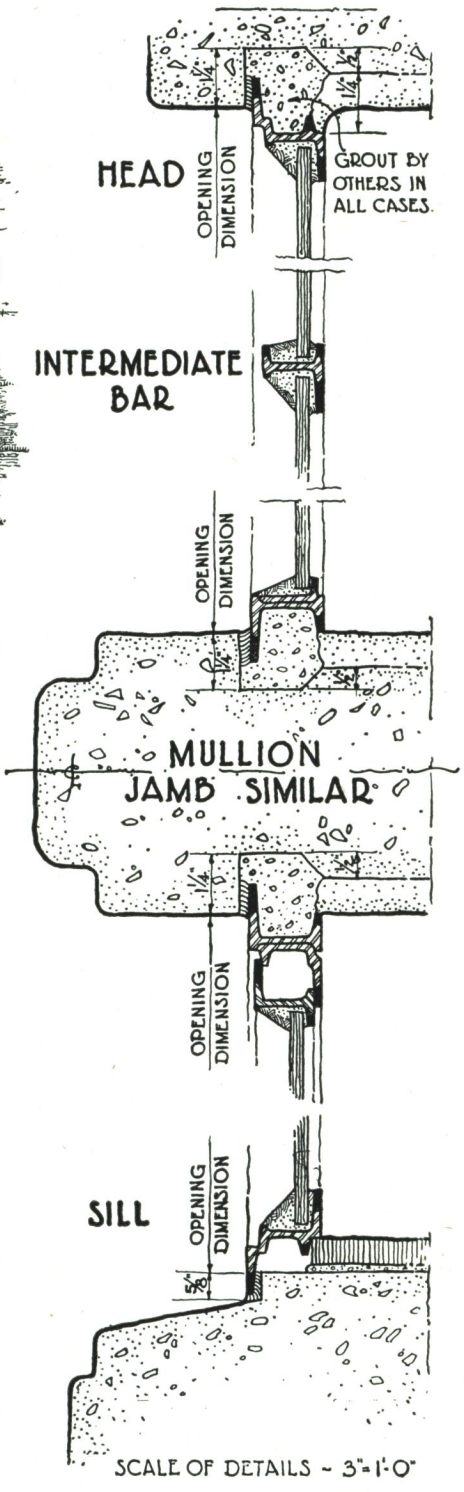
SECTION THRU SIDE LIGHTS





CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS

SECTIONS ON THIS PLATE ARE "A", "N", "B", "D" AND "H" AS SHOWN ON PLATES NUMBERS G-405, G-406



SCALE OF DETAILS - 3"=1'-0"

Fenestra 1930

FENMARK WINDOWS
CONCRETE INSTALLATION

Plate No G-414

Continued on next page

SCREENED "FENMARK" WINDOWS

Solid section, steel windows designed to accommodate Fenestra bronze screens. Swing leaves open out and sill ventilator opens in at the top while sliding up from the bottom. Polished, solid bronze hardware operating through the screen. Designed for use in hospitals, hotel dining rooms, restaurants, or other public or semi-public buildings where freedom from insects is desirable

SPECIFICATIONS

For nomenclature of individual types refer to standard drawings or price sheets obtainable from local Fenestra representatives.

Notes are explanatory and need not be included in specifications.

GENERAL

All windows shall be Fenestra Screened "Fenmark" Windows manufactured by Detroit Steel Products Company.

MATERIAL

(Note:—Same as the Material Specifications for Fenmark Windows except that Fenestra Screens are supplied.)

SCREENS—Material for screens and screen frames shall be as shown under "Screens."

CONSTRUCTION

(Note:—Same as the Construction Specifications for Fenmark Windows.)

ATTACHED HARDWARE

(Note:—Attach at the factory.)

SWING LEAF HINGES—All side hung swing leaves shall be hung on two heavy extension (cleaning) hinges of special, solid rolled, sherardized steel with heavy fillets in re-entrant angles. Hinge pins of solid bronze (non-removable) shall be fitted into flanged bronze bushings.

(Note:—Bronze pins and bushings provide 100 per cent bronze bearing at all moving pivot points.)

(Note:—"Close In" hinges standard on all types with adjacent swing leaves.)

LOCKING HANDLE BRACKET—Provide tapped holes in frame stile for attachment of bracket.

(Note:—Locking handle brackets for Screened Fenmark Windows will be shipped separately from the window and attached in the field. See Detached Hardware.)

SWING LEAF KEEPER shall be of forged steel welded to the swing leaf stile.

KEEPER—One malleable iron keeper shall be supplied for each sill ventilator handle, to be solidly riveted to the meeting rail.

SWING LEAF OPERATOR PROVISIONS—Provide die cast brackets rigidly attached to the frame meeting rail above the sill ventilator for the attachment of Fenestra standard through screen operator. Provide tapped holes in the bottom rails of all swing leaves for operator attachment.

SILL VENTILATOR OPERATOR PROVISIONS

(Note:—Same as the Sill Ventilator Operating Specifications for Fenmark Windows.)

SCREEN PROVISIONS—Provide one or more pairs of tapped holes in the top and bottom rail of the frame for attachment of screen retaining clips. Provide two pairs of tapped holes in each frame stile opposite sill ventilator for attachment of sill screen retaining clips.

DETACHED HARDWARE

(Note:—All detached hardware shall be shipped carefully packed to prevent damage until applied for use.)

LOCKING HANDLES AND HANDLE BRACKETS shall be assembled at the factory and designed to attach to the casement frame by three countersunk screws inserted from the outside of the windows.

Handle bracket shall be an ornamental die casting designed to accommodate and entirely conceal the locking cam and the swing leaf keeper when the window is closed.

LOCKING HANDLES FOR SIDE HUNG SWING LEAVES shall be of solid bronze, No. 1115 (U. S. Government specification), of ornamental design and coinage finish obtained without the use of plating or chemicals. All locking handles shall be designed with a hinge action to permit their slipping through the screen escutcheon when screen is placed or removed. Each handle to be rigidly attached to a die cast stud and cam, equipped with concealed coil spring to take up wear and prevent rattle. (Plate G404.)

CAM LOCKING HANDLE FOR SILL VENTILATOR shall be of solid bronze (U. S. Government specification) of ornamental design and coinage finish obtained without the use of plating or chemicals. Each handle shall be equipped

Continued on next page

with a concealed coil spring to take up wear and prevent rattle and shall be attached to the top rail of the sill ventilator by three bronze screws. Handle No. 1122.

Operators for Side Hung Leaves shall be Fenestra special thumbscrew type No. 1116, designed to provide easy operating movement through the screen.

Operator shall consist of a solid bronze arm passing through a solid bronze fulcrum guide equipped with a friction plate. One end of the arm to attach to the sill of the swing leaf by a pressed steel bracket; the other end to carry a solid bronze peg for a finger grip. Operating mechanism to be mortised into the frame bracket and held by bronze screws. (Plate G404.)

Open-In Transom Hardware—Provide for each open-in transom one solid bronze automatic spring catch, No. 739. (Plate G101.)

MASTIC

(Note:—Same as the Mastic Specifications for Fenmark Windows.)

ERECTION

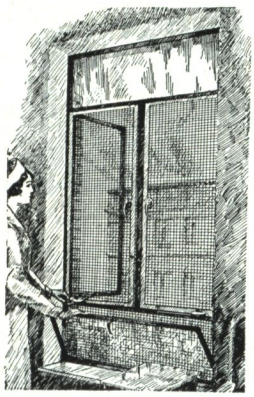
(Note:—Same as the Erection Specifications for Fenmark Windows.)

PAINTING

(Note:—Same as the Painting Specifications for Fenmark Windows.)

GLASS AND GLAZING

(Note:—Same as the Glass and Glazing Specifications for Fenmark Windows.)



SCREENS

For Side Hung Swing Leaves—Screens shall be designed to set flat against the inside of the casement frame with casement locking handle and operating hardware extending through the screen to permit operation of the swing leaf without touching the screen.

Screen frames shall be of best quality, cold rolled, rustproofed, strip steel or bronze, formed 1″ wide by ½″ thick at head and jambs (bottom rails 1½″ x ½″). All frames shall contain a triangular reinforcing brace running the full length of the stile. Paint steel frames two coats of gray lead and oil, baked on. Screen cloth shall be standard woven 16-mesh of oxidized finish bronze wire and shall be held taut along both stiles and rails by a specially formed cap interlocked with the main portion of the frame.

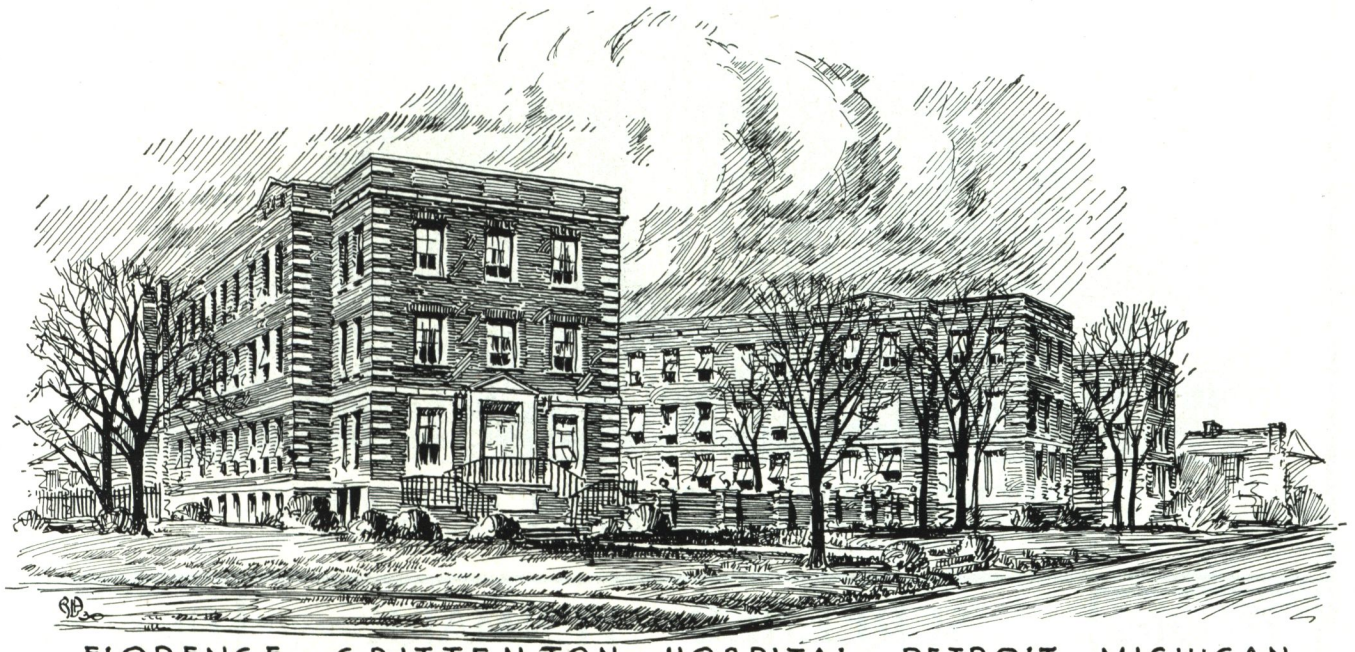
(Note:—Screens with bronze frames or with finer mesh may be had at extra cost.)

Each screen shall be provided with a 22-gauge steel escutcheon with circular hole to fit over and around the locking handle. Bottom rail of each screen shall be designed with a slot to permit the passage of the operator arm.

For Sill Ventilator the screen shall correspond in material and workmanship to screens for side hung swing leaves and shall be attached to the outside of the frame by four pressed angle clips.

SHADING

(Note:—Same as the Shading Specifications for Fenmark Windows.)



FLORENCE CRITTENTON HOSPITAL DETROIT MICHIGAN
SMITH HINCHMAN & GRYLLS, ARCHITECTS

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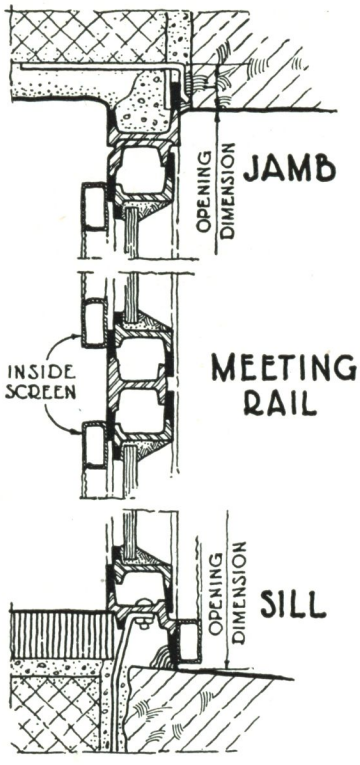
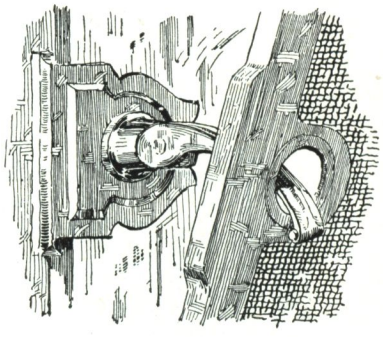
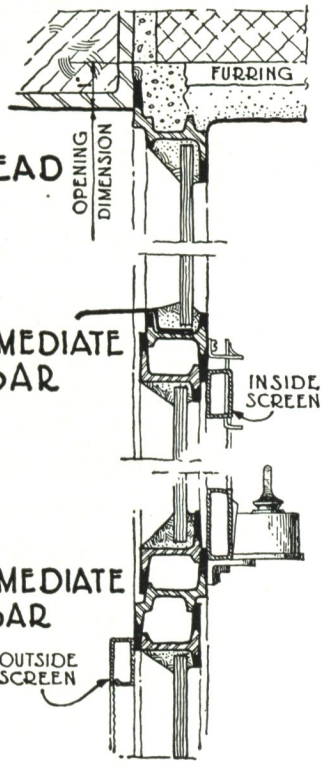


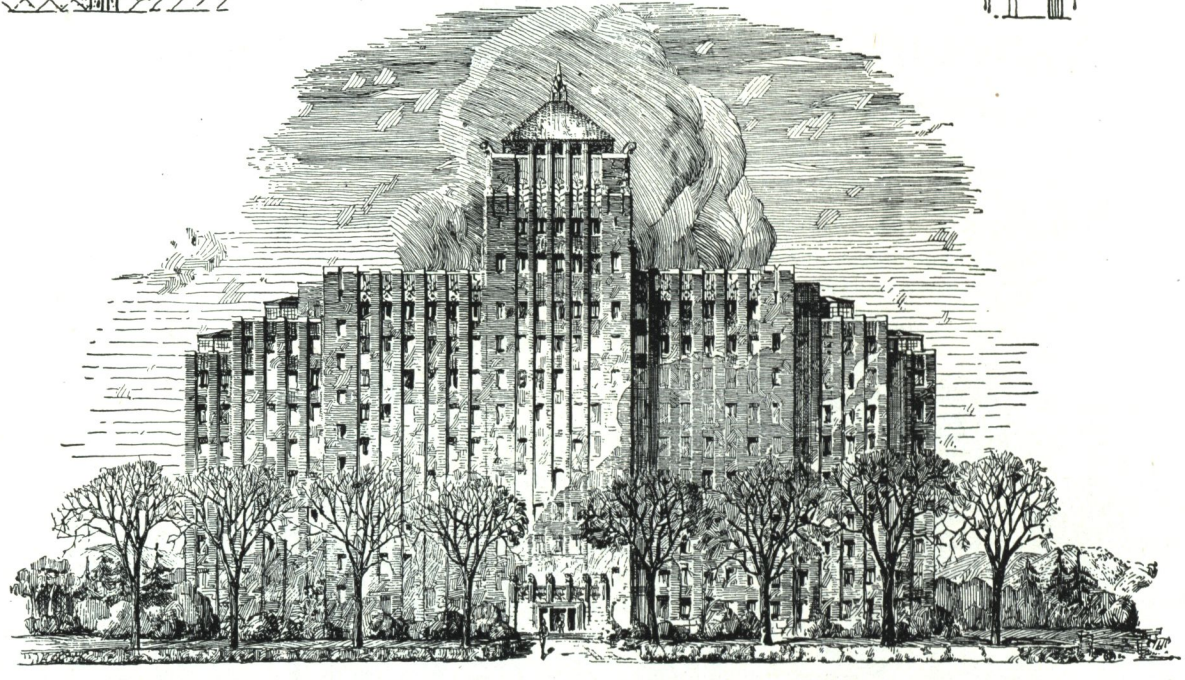
CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS

SECTIONS ON THIS PLATE ARE "H", "K", "G", "A", "N" AND "P" AS SHOWN ON PLATES NUMBERS G-405 G-406





SCALE OF DETAILS - 3"= 1'-0"



HARBORVIEW HOSPITAL KINGS COUNTY SEATTLE WASH
THOMAS, GRAINGER & THOMAS - ARCHITECT'S

Fenestra 1930

SCREENED FENMARK TYPICAL HOSPITAL INSTALLATION

Plate No G-501

Continued on next page

PROJECTED "FENMARK" WINDOWS

Solid section, steel windows with upper ventilators opening out from the bottom while sliding down from the top and sill ventilator opening in from the top while sliding up from the bottom. Solid bronze hardware of ornamental design. No Fenestra screens are supplied. Intended for use in offices, schools, and public and commercial buildings

SPECIFICATIONS

For nomenclature of individual types refer to standard drawings or price sheets obtainable from local Fenestra representatives.

Notes are explanatory and need not be included in specifications.

GENERAL

All windows shall be Fenestra Projected "Fenmark" Windows as manufactured by Detroit Steel Products Company.

MATERIAL

WINDOW SECTIONS shall be specially designed, hot rolled, individually straightened, solid steel bars with heavy fillets in re-entrant angles, designed for exterior glazing.

FRAME MEMBERS—Jam and head members shall be heavy unequal leg sections, designed for adequate anchorage. Sills and horizontal intermediate bars shall be Z's with offset baffles.

SWING LEAF AND SILL VENTILATOR MEMBERS shall be Z-shaped sections with baffles. Jamb weathering (at sill ventilator) shall be offset unequal leg channels forming beveled, interior, sliding shoe grooves.

MUNTINS shall be T sections.

MULLIONS shall be interior and exterior plates secured with bolts and nuts.

TRANSOM BARS shall be standard Fenestra (Z bars and angles) (angles and channels with interior pressed steel mullion covers).

(Note:—Other designs of mullions and transom bars may be used. If desired, provisions for them should be made in the ornamental iron or structural steel specifications.)

CONSTRUCTION

FRAMES, including intermediate bars, shall be mortise and tenon, air hammer riveted and electrically welded at corners. All exposed faces at welds shall be ground to a smooth finish.

VENTILATORS—All stiles and rails of ventilators shall be mitered at corners and electrically butt welded with all exposed faces at welds ground smooth.

MUNTINS—Joints at frame and ventilator members shall be closely fitted mortise and tenon, air hammer riveted.

MULLIONS—Provide mullions wherever two or more windows are placed side by side in the same opening.

SILL AND JAMB ANCHOR CLIPS—Furnish steel (sill) (jamb) anchor clips with bolts to attach to frames where required.

ATTACHED HARDWARE

(Note:—Attached at factory.)

LOCKING HANDLE BRACKETS—On open-out ventilators, provide special design solid, rolled Z-bar brackets, electrically welded to ventilator bottom rails for attachment of locking handle.

VENTILATOR OPERATING HARDWARE—Ventilators shall (project out from the bottom while sliding down from the top) (or) (project in from the top while sliding up from the bottom) as indicated. The ventilators shall be so constructed that by tilting they may be conveniently washed from inside the building.

(Note:—Specify swing-out, swing-in or both as required.)

Each ventilator shall be balanced on two supporting arms of solid spring steel. Connections between supporting arms and ventilators shall be made by steel brackets rigidly supported and double riveted to the vertical members, with arms attached to brackets by bronze shoulder pivots. Each ventilator shall be equipped with two brass friction shoes sliding vertically in the weathering channels.

Continued on next page

ALIGNMENT SPRINGS—Each open-out ventilator shall be equipped with two shouldered, alignment control springs riveted to the channel jambs.

(Note:—Include if ventilators are more than 20" high.)

(Note:—The shoulders of these springs are so designed and located as to limit the downward travel of the friction shoes and stop all open ventilators in uniform alignment of approximately 60 degrees. When it is desired to open the ventilator at a greater angle for washing, light pressure on the strings depresses the shoulders and allows the friction shoes to slide past. As the ventilator is returned to a closed position, the action of the spring is automatic.)

DETACHED HARDWARE

OPERATING HARDWARE FOR PROJECTED FENMARK WINDOWS shall be of bronze, with coinage finish, and shall be carefully packed to prevent damage until applied for use.

LOCKING AND OPERATING HARDWARE

(Note:—Select as required.)

FOR OPEN-OUT VENTILATORS—Bronze pole ring, No. 151, at head of ventilator. Bronze, cam action handle, No. 733 or No. 914, attached to bracket on bottom rail by bronze bolt and friction clevis (No. 733 shall be provided with a notched head to permit restricted ventilation), steel strike plate with brass rubbing rivet.

FOR OPEN-IN VENTILATORS—Bronze cam action handle No. 1071, with riveted, iron-lipped strike or bronze automatic spring catch, No. 739, for pole operation.

Where open-in ventilator is located immediately below an open-out ventilator, use combination riveted iron strike.

MASTIC

The window manufacturer shall furnish sufficient mastic to form a weathertight union between window frames and mullions or transom bars. No caulking by window manufacturer at head or jambs.

ERECTION

(Note:—Include in the masonory specifications that all windows shall be caulked at head, sill and jambs with mastic or other caulking compound to be supplied and applied by the erectors, to form a weathertight union between the window frames and the building construction.)

(Note:—Include in the masonry specifications that all masonry openings shall be accurately constructed in accordance with standard Fenestra installation details so that windows may be erected after masonry is completed.)

(Note:—Include in the masonry specifications that all mortar grouting, pointing, etc., shall be done by the mason contractor after the windows have been erected.)

All Fenestra Projected Fenmark Windows shall be erected in prepared openings by the Fenestra Construction Company, under a separate contract.

All windows shall be set plumb and true, properly aligned and securely anchored and all ventilators properly adjusted before glazing.

Standard Fenestra sill anchors shall be used (1) in all cases where a ventilator comes at the sill of the window; (2) in all multiple unit openings where mullions are not anchored into the sills.

Standard Fenestra Jamb Anchor Clips, No. 822, to be used as necessary.

Apply all hardware in accordance with the manufacturer's directions. Detached hardware shall not be installed until after glazing and painting have been completed and building has been plastered.

PAINTING

All windows shall be given one dip-coat of gray lead and oil paint by the manufacturer before shipment.

(Note:—The following should be provided for in the painting specifications: "One additional coat of paint should be applied after erection, before glazing. Painting contractor shall apply one field coat of paint before erection to all parts of window which cannot be painted after erection." Further painting should be deferred until at least three weeks after glazing to allow putty to set. One or more additional coats may then be applied as required.)

(Note:—Where desired, the Fenestra Construction Company at reasonable added cost will do field painting after erection. If required, so specify here, including specification for paint and its application.)

GLASS AND GLAZING

(Note:—The following should be included in the glass and glazing specifications: "Glass shall be (⅛" light plate) (¼" thick plate)." Single or double strength glass is not recommended.

"Putty shall be steel casement putty." This is a special, high grade putty which insures quick setting. Ordinary wood window putty must not be used.)

All windows shall be glazed from the outside. All glass shall be set in a bed of putty and secured by copper plated steel spring glazing clips furnished by the window manufacturer. Face putty should be applied in a neat, clean-cut, smooth manner.

SHADING

(Note:—All shades must be located at least 2" from the inside face of the window to clear hardware.)

(Note:—Each Projected Fenmark Window is drilled at both jambs near the head for attachment of standard shade bracket clips which are supplied at slight added cost. These clips are of sufficient depth to bring the shade bracket to the proper position and are slotted to accommodate any standard bracket. If shade bracket clips are required, so specify.)

UNDERWRITERS

(Note:—Under certain conditions and limitations these windows can be supplied with Underwriters' Label.)

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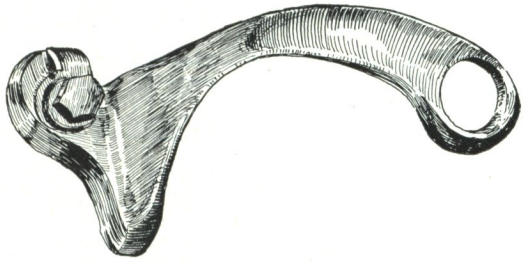
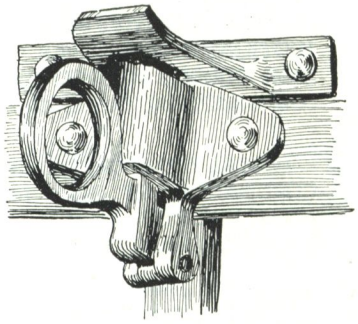
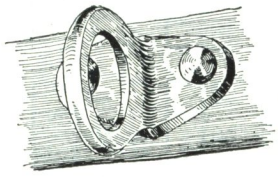


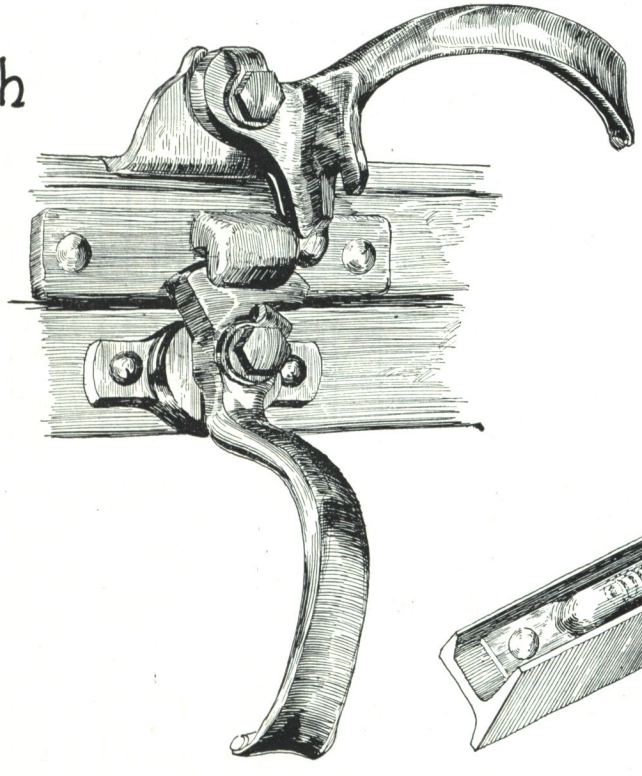
Handle
NO.-914
FOR POLE OPERATION

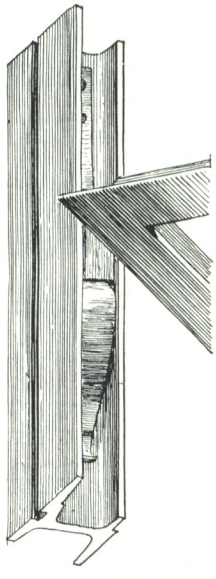


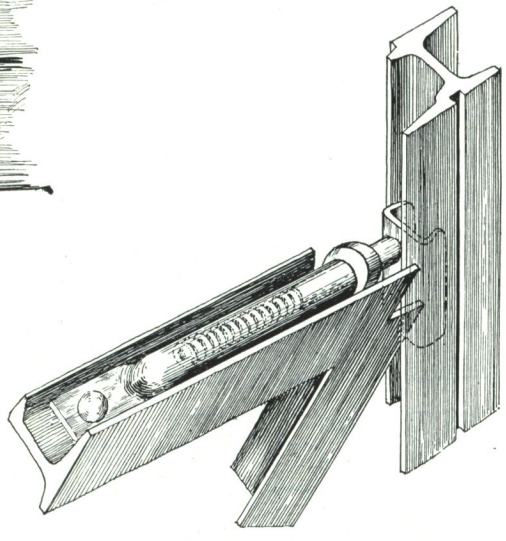


Spring Catch
NO.-739B

Pole Ring
NO-151







Alignment Stop

Upper Handle NO.-733
Lower Handle NO.-1071

Sliding Friction Shoe

Fenestra 1930

FENMARK PROJECTED HARDWARE

Plate No G-101

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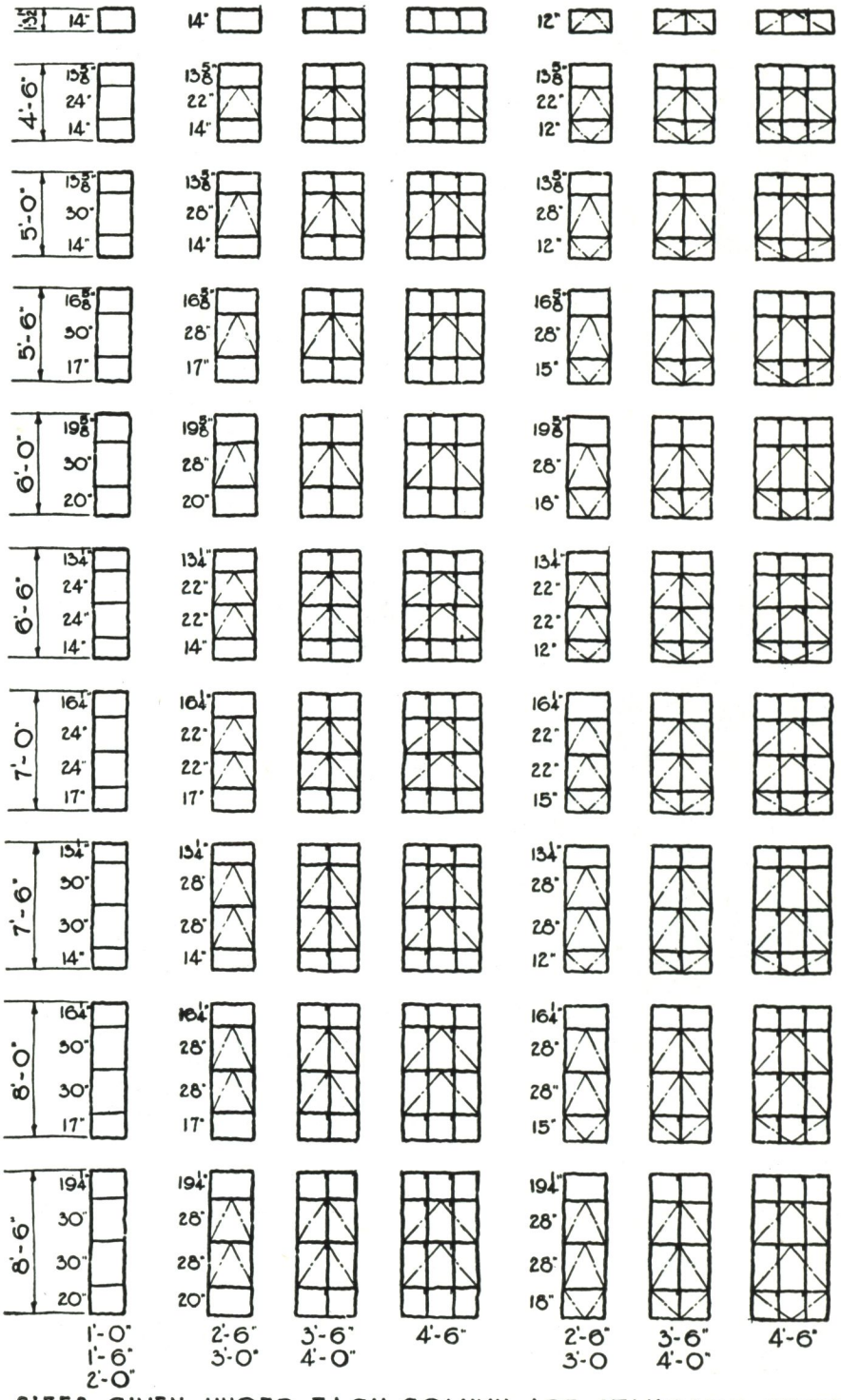

NOTES

ALL PROJECTED FENMARK WINDOW DIMENSIONS ARE EQUAL TO THE CLEAR OPENING DIMENSION FRAME MEMBERS PROJECT BEYOND THESE ON ALL FOUR SIDES FOR ANCHORAGE IN BLDG. CONSTRUCTION

DIMENSIONS SHOWN AT LEFT OF EACH GROUP OF TYPES ARE STANDARD GLASS HEIGHTS GIVEN TO SHOW PROPER PROPORTIONS FOR HORIZONTAL DIVISIONS

TYPICAL ELEVATIONS SHOWING COMBINATIONS OF UNITS AND APPLICABLE DETAILS ARE FOUND ON PLATE NUMBER G-103.

SIZES GIVEN UNDER EACH COLUMN ARE STANDARD WIDTHS OF CLEAR OPENINGS

Fenestra 1930

FENMARK PROJECTED TYPES AND SIZES

Plate No G-102

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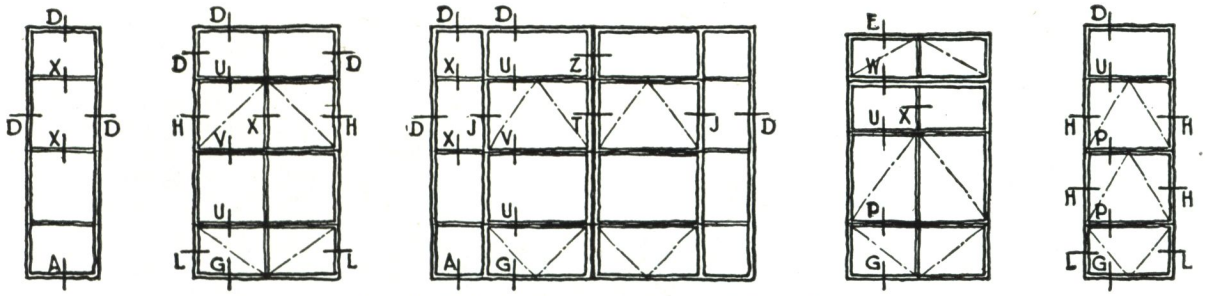
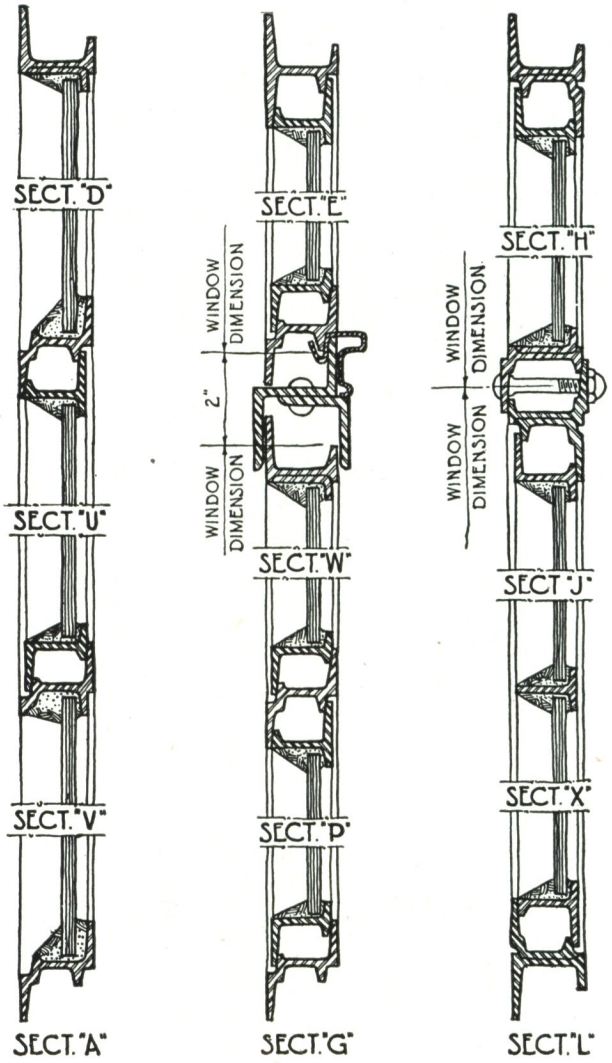


TYPICAL ELEVATIONS



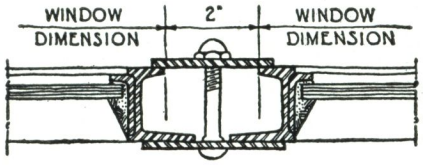
NOTES

FULL SIZE SECTIONS ARE FOUND ON PLATES NUMBERS G-405, G-406

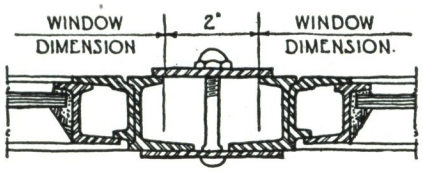
WIDTH OF BARS "W", "Z" AND "T" MUST BE ADDED TO OVER-ALL SIZES WHEN COMBINED UNITS ARE USED WITHIN MASONRY OPENING.

SECTION "W" IS LIMITED TO OPENINGS UP TO 9'-0" IN WIDTH.

SECTION "J" SHOWS HOW UNITS MAY BE COMBINED WITHOUT USE OF PLATE MULLION AND MUST BE SPECIFIED IF DESIRED.



SECT."Z"



SECT."T"

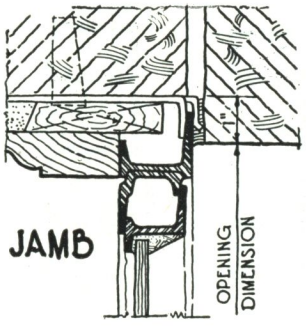
Fenestra 1930

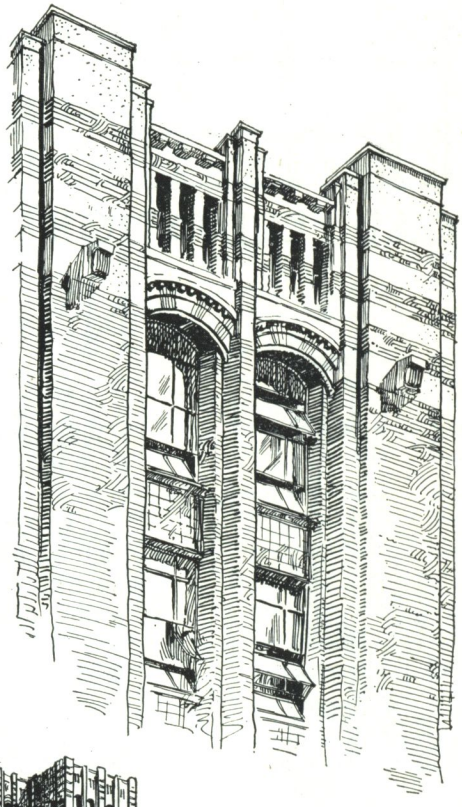
FENMARK PROJECTED COMBINATION DETAILS

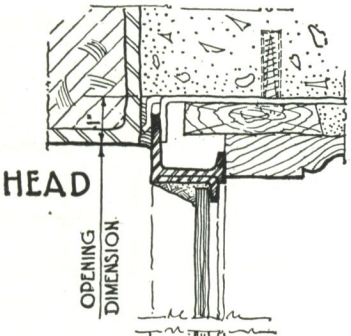
Plate No G-103

Continued on next page

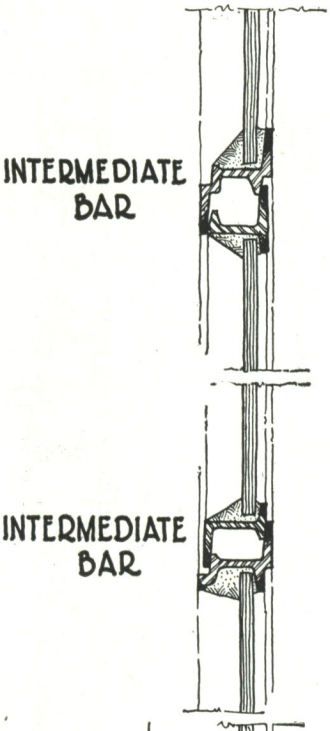
SCALE OF DETAILS - 3"=1'-0"

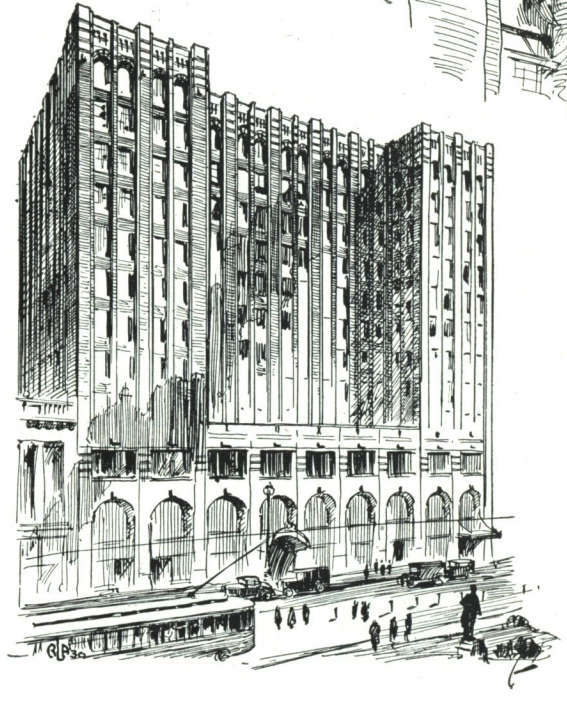




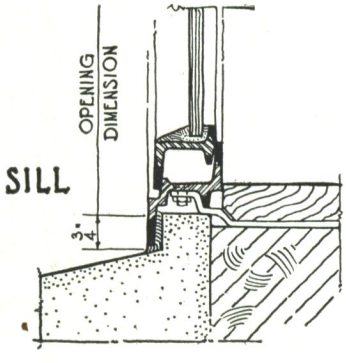


CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS





SECTIONS ON THIS PLATE ARE "D","U","V","G" AND "H" AS SHOWN ON PLATES NUMBERS G-405, G-406



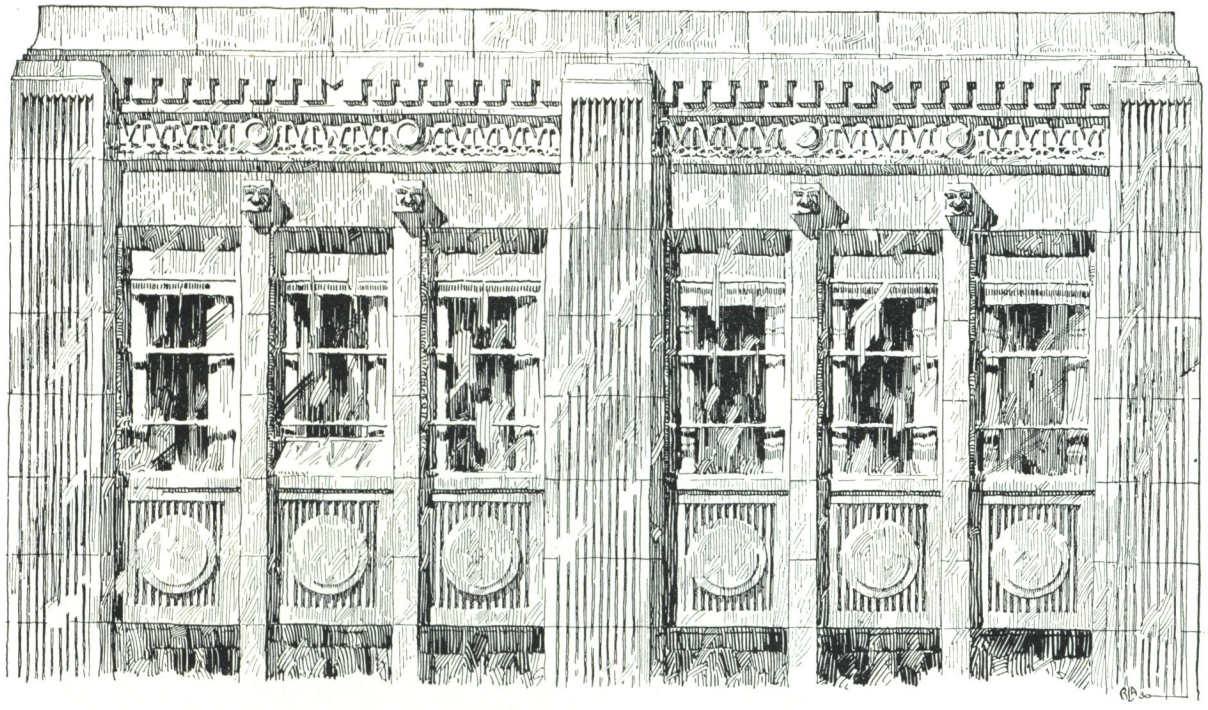
GRISWOLD BUILDING
DETROIT - MICHIGAN
ALBERT KAHN INC.
ARCHITECT

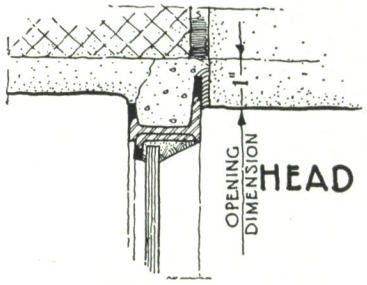
Fenestra 1930

FENMARK PROJECTED BRICK INSTALLATION

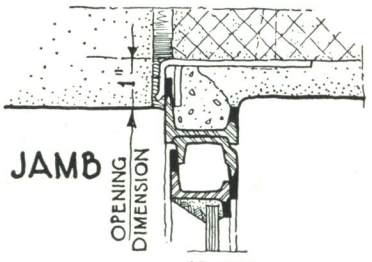
Plate No G-104

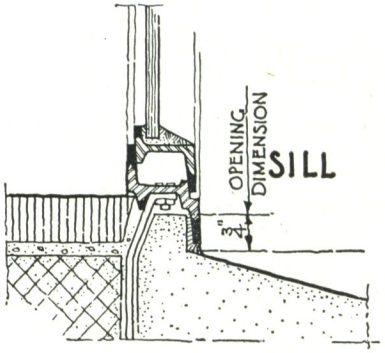
Continued on next page





JOSEPH HILTON BLDG.
NEW YORK CITY
D. R. SWARTBURG
ARCHITECT

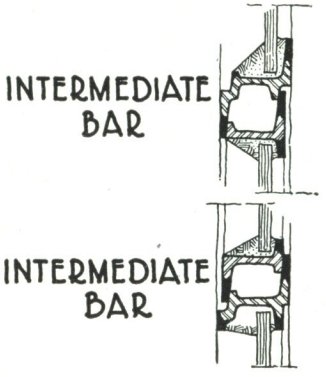




NOTES

CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS.

SECTIONS ON THIS PLATE ARE "D", "G", "H", "U" AND "V" AS SHOWN ON PLATES NUMBERS G-405, G-406



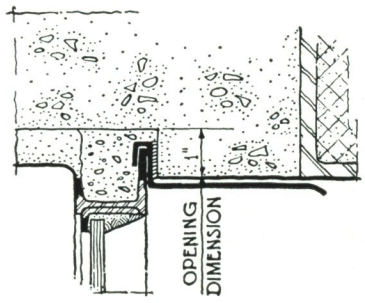
SCALE OF DETAILS - 3"=1'-0"

Fenestra 1930

FENMARK PROJECTED STONE INSTALLATION

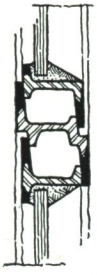
Plate No G-105

Continued on next page

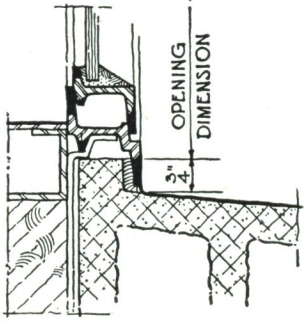


HEAD

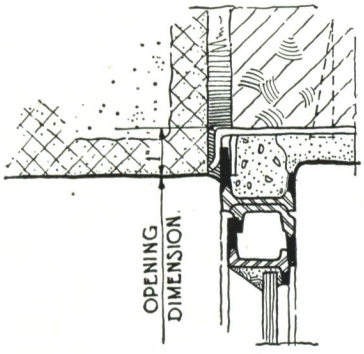
INTERMEDIATE BAR



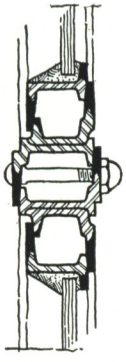
INTERMEDIATE BAR



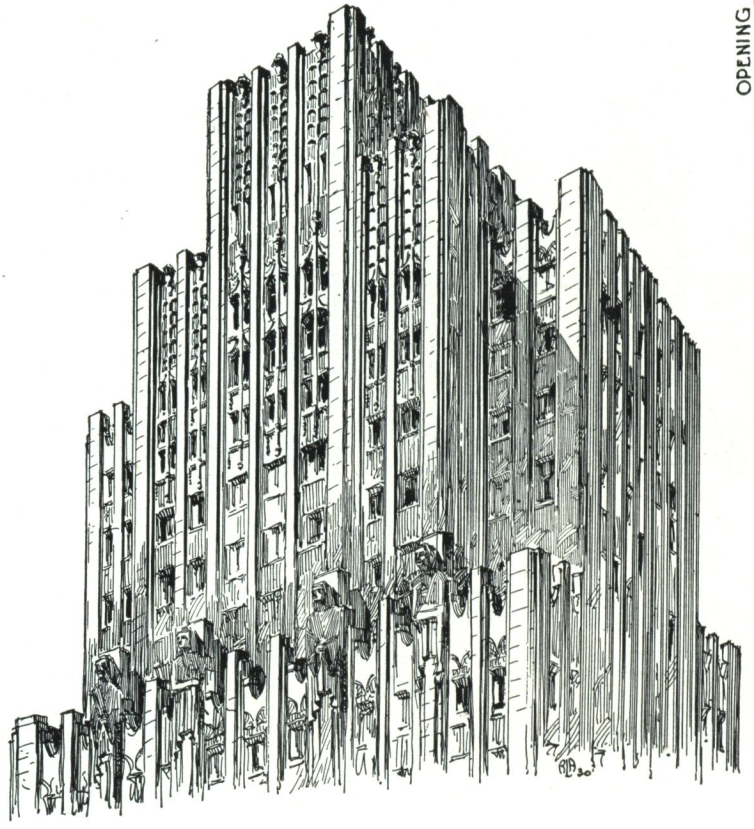
SILL



JAMB



MULLION



DETAIL UPPER PORTION
CONTINENTAL LIFE INSURANCE
BUILDING - ST. LOUIS, MISSOURI
WILLIAM B. ITTNER - ARCHITECT

SCALE OF DETAILS - 3"=1'-0"

NOTES

CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS.

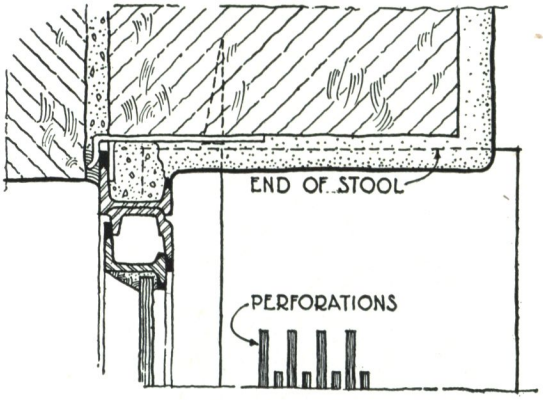
SECTIONS ON THIS PLATE ARE "D" "U" "P" "G" "H" AND "J" AS SHOWN ON PLATES NUMBERS G-405, G-406

Fenestra 1930

FENMARK PROJECTED TERRA COTTA INSTALLATION

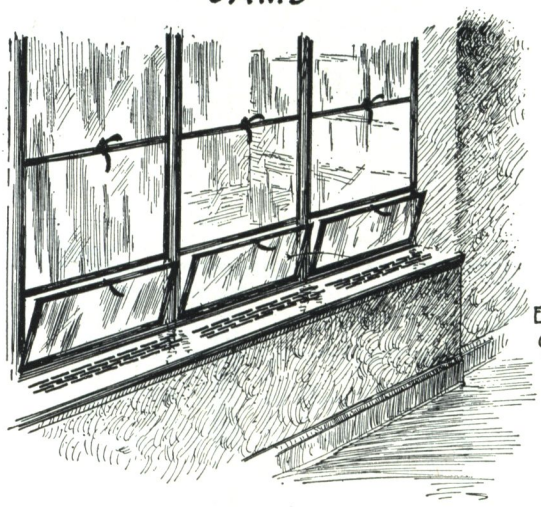
Plate No G-106

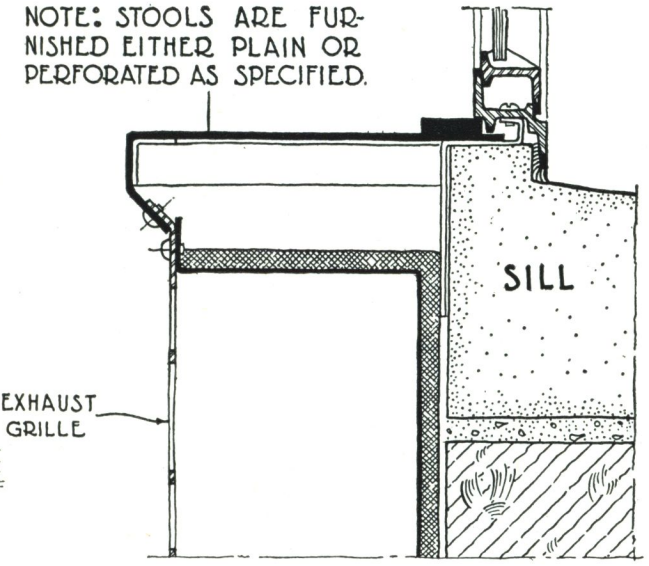
Continued on next page

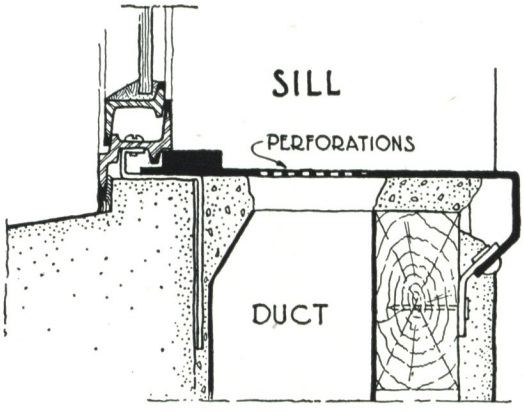


JAMB

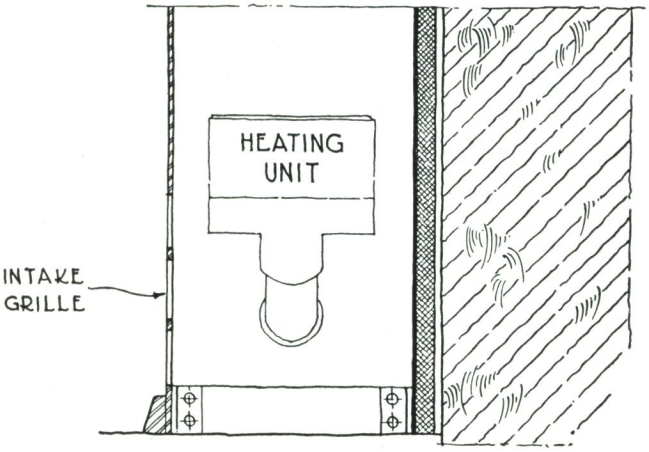
NOTE: STOOLS ARE FURNISHED EITHER PLAIN OR PERFORATED AS SPECIFIED.







SECTION THROUGH STOOL WITH HOT AIR SUPPLY DUCT



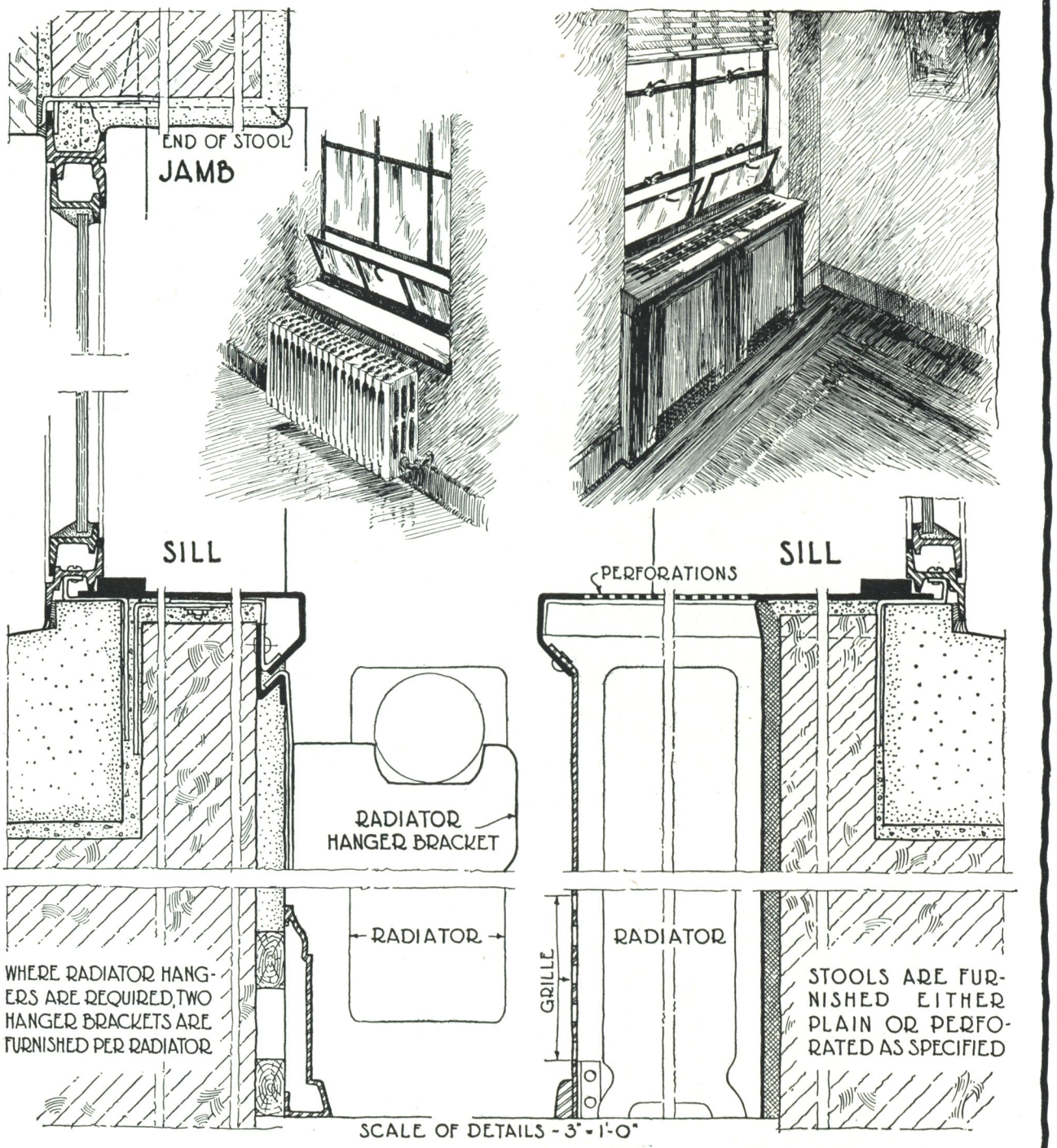
SECTION THROUGH STOOL SHOWING CONCEALED RADIATION

Fenestra 1930

FENMARK WINDOWS
METAL STOOL SUGGESTIONS

Plate No G-107

Continued on next page



SECTION THRU STOOL SHOWING RADIATOR TOTALLY EXPOSED

SECTION THRU STOOL SHOWING RADIATOR TOTALLY CONCEALED

Fenestra 1930

FENMARK WINDOWS

METAL STOOL SUGGESTIONS

Plate No G-108

Continued on next page

SCREENED "FENCRAFT" CASEMENTS

A series of solid section, steel casement windows with swing leaves opening out on extension, bronze bearing hinges. Designed to accommodate Fenestra interior bronze mesh screens. Hardware of solid bronze or nickel silver, supplied in Coinage, Scaly, Sand or Hammered finishes as selected. Arranged for leaded or plate glass or made with interior muntins and small glass lights if desired

SPECIFICATIONS

For nomenclature of individual types refer to standard drawings or price sheets obtainable from local Fenestra representatives.

Notes are explanatory and need not be included in specifications.

GENERAL

Windows shall be Fenestra Screened Fencraft as manufactured by Detroit Steel Products Company.

(Note:—Shop drawings from window manufacturer shall be submitted for architect's approval before starting fabrication.)

MATERIAL

CASEMENT SECTIONS shall be specially designed, hot rolled, solid steel casement bars, individually gauged for straightness, with heavy fillets in all re-entrant angles.

FRAME MEMBERS shall be equal leg channel sections.

SWING LEAF MEMBERS shall be Z-shaped sections with baffles.

MUNTINS shall be T sections.

MULLIONS AND TRANSOM BARS shall be Fenestra, hot rolled, solid steel, double head, T sections so designed as to form an interlocking assembly.

MEETING RAILS shall be unequal leg H sections.

SCREENS—Material for screens and screen frames shall be as shown under "Screens."

CONSTRUCTION

FRAMES AND SWING LEAVES shall be mitered and electrically butt welded at all corners. All exposed faces at welds shall be ground to a smooth finish. Provide continuous, two-point, flat contact weathering between swing leaves and frames.

MUNTINS shall be continuous from head to sill and from jamb to jamb and so interlocked as to increase the strength and rigidity at each point of intersection. Joints at frame shall be mortise and tenon, air-hammer riveted.

(Note:—Muntins may be omitted to permit glazing in single lights of leaded or plate glass. If desired, so specify. We do not supply leaded glass.)

MULLIONS OR TRANSOM BARS shall be provided between casements where two or more windows are placed side by side or one above another in the same opening.

(Note:—Specify as above when manufacturer is to supply steel mullions and transom bars.)

HEAD DRIP—Provide a continuous, heavy, electro-galvanized steel head drip above all swing leaves.

ATTACHED HARDWARE

(Note:—Attach at the factory.)

SIDE HINGES—All side hung swing leaves shall be hung on two heavy, extension (cleaning) hinges of special, solid rolled, sherardized steel with heavy fillets in re-entrant angles. Hinge pins of solid bronze (non-removable) shall be fitted into flanged bronze bushings.

(Note:—Bronze pins and bushings provide 100 per cent bronze bearing at all moving pivot points.)

TOP HINGES—Swing leaves hung from the top shall be hung on heavy, flush, extruded bronze hinges with bronze hinge pins.

SWING LEAF KEEPER shall be a steel forging and welded to the swing leaf stile.

LOCKING HANDLE BRACKET—Provide countersunk holes in frame stile for attachment of bracket.

(Note:—Locking handle brackets for Screened Fencraft Casements will be shipped separate and attached in the field. See Detached Hardware.)

OPERATOR PROVISIONS—Provide a die cast bracket rigidly attached to the sill of the frame by three countersunk machine screws for the attachment of Fenestra standard through-screen operator. Provide tapped holes in bottom rails of all swing leaves for operator attachment.

SCREEN PROVISIONS—Provide one or more pairs of tapped holes in the top rail of the frame for the attachment of screen retaining clips. The bottom rail of each single unit shall have one pair of tapped holes for attachment of screen supporting bracket.

Continued on next page

DETACHED HARDWARE

All detached hardware shall be shipped carefully packed to prevent damage until applied for use.

LOCKING HANDLES AND HANDLE BRACKETS shall be assembled at the factory and designed to attach to the casement frame by three countersunk screws inserted from the outside of the windows.

Handle bracket shall be an ornamental die casting designed to accommodate and entirely conceal the locking cam and the swing leaf keeper when the window is closed.

Locking handles for side hung swing leaves shall be of solid bronze (U. S. Government specification), of ornamental design and coinage finish obtained without the use of plating or chemicals. All locking handles shall be designed with a hinge action to permit their slipping through the screen escutcheon when screen is placed or removed. Each handle to be rigidly attached to a die cast stud and cam and equipped with a concealed coil spring to take up wear and prevent rattle. No. 1115.

(Note:—At extra cost special finishes may be secured: "Scaly," "Coarse Sand," or "Hammered" in either bronze or nickel silver; or Chromium-Plated in bronze only.)

OPERATORS FOR SIDE HUNG LEAVES shall be Fenestra special thumb screw type designed to provide easy operating movement through the screen. No. 1116.

Operator shall consist of a solid bronze arm passing through a solid bronze fulcrum guide equipped with a friction plate. One end of the arm to attach to the sill of the swing leaf by a pressed steel bracket; the other end to carry a solid bronze peg for a finger grip. Operating mechanism to be mortised into the frame bracket and held by bronze screws.

OPERATOR FOR TOP HUNG LEAVES shall be solid bronze peg and stay type designed to operate through the screen. No. 1117.

(Note:—Special operator finishes corresponding to special handle finishes may be had at extra cost.)

MASTIC

The window manufacturer shall furnish sufficient mastic (3 lbs. per each lineal foot of perimeter) to form a weather tight bond at head, sill, both jambs and mullions.

ERECTION

(Note:—Where desired, the Fenestra Construction Company, under a separate contract will erect windows in prepared openings. If desired, so specify.)

(Note:—We recommend that casements be installed in prepared openings accurately constructed in accordance with the Standard Fenestra installation details. We do not recommend building casements directly into masonry as the walls are laid up, as this frequently delays erection and is apt to result in springing or racking the casements out of shape.)

All casements shall be set plumb and true properly aligned and securely anchored before glazing.

All mullions shall be bolted rigidly to the frames.

Set all frames in mastic, neatly applied where they come in contact with the building construction or steel mullions.

(Note:—When casements are set directly into stone construction, apply one coat of shellac to stone to avoid stain by mastic.)

Apply all hardware in accordance with manufacturer's directions.

PAINTING

All casements shall receive one coat of rust-resisting primer and one coat of dark battleship gray paint at the factory—each coat to be sprayed on and baked separately.

(Note:—Finish coat should be applied after glazing.)

GLASS AND GLAZING

(Note:—The following should be included in the Glass and Glazing Specifications:

"Glass shall be (⅛" light plate) (¼" thick plate)." Single or double strength glass is not recommended.

"Putty shall be steel casement putty." This is a special high grade putty which assures quick setting. Ordinary wood window putty must not be used. If leaded glass is desired, so specify.)

All casements shall be glazed from the outside. All glass shall be set in a bed of putty and secured by copper plated, steel, spring glazing clips furnished by the casement manufacturer. Face putty shall be applied in a neat, clean cut, smooth manner.

(Note:—Do not paint until putty has thoroughly hardened.)
(Note:—Glazing beads at extra cost.)

SCREENS

Screens shall be designed to set flat against the inside of the casement frame with casement locking handle and operating hardware extending through the screen to permit operation of the swing leaf without touching the screen.

Screen frames shall be of best quality, cold rolled, rustproofed, strip steel, formed 1" wide by ½" thick at head and jambs (bottom rails 1½" x ½"). All frames to contain a triangular reinforcing brace running the full length of the stile. Paint to be two coats of gray lead and oil baked on. Screen cloth to be standard woven 16-mesh, oxidized finish bronze wire held taut along both stiles and rails by a specially formed cap interlocked with the main portion of the frame, but quickly removable for rewiring.

(Note:—Screens with bronze frames or with finer mesh may be had at extra cost.)

Each screen shall be provided with a 22-gauge steel escutcheon with circular hole to fit over and around the locking handle. Bottom rail of each screen shall be designed with a slot to permit the passage of the operator arm. (See Screened Fenmark specifications.)

SCREEN SUPPORTING BRACKET shall be a steel stamping attached to bottom frame rail of each single unit. Screen retaining clip shall be a steel stamping attached at the head.

SHADING

(Note:—Each casement is drilled at both jambs near the head for the attachment of standard shade and drapery brackets which can be purchased from local decorators.)

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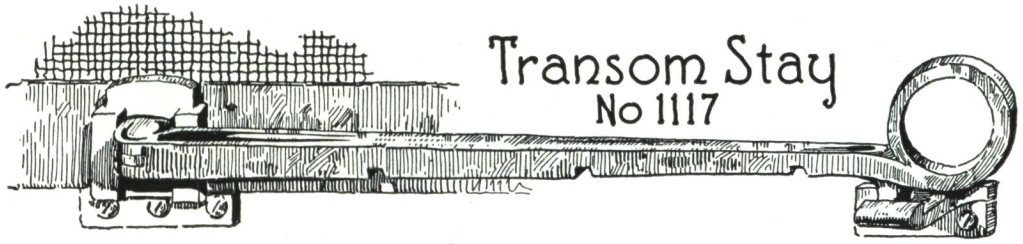
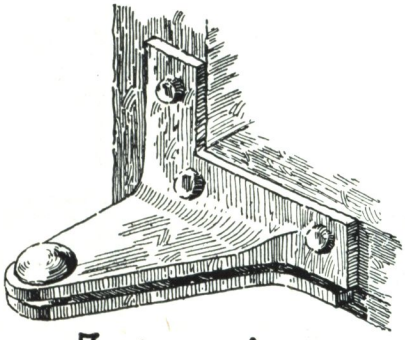
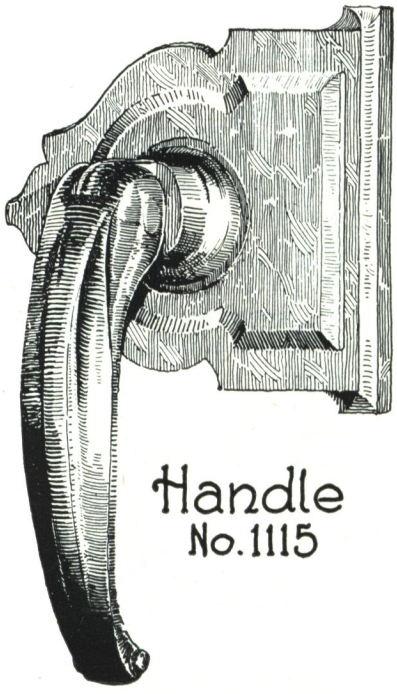


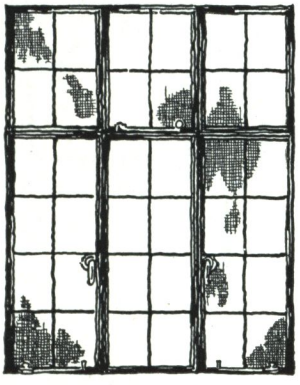
Transom Stay
No 1117



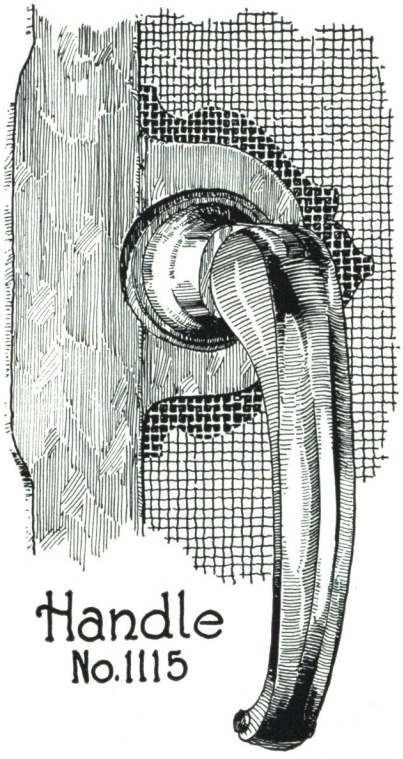
Extension Hinge



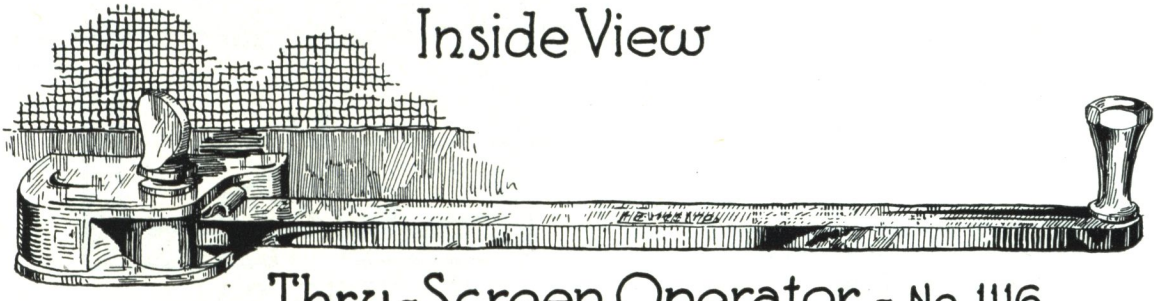
Handle
No. 1115



Inside View



Handle
No. 1115



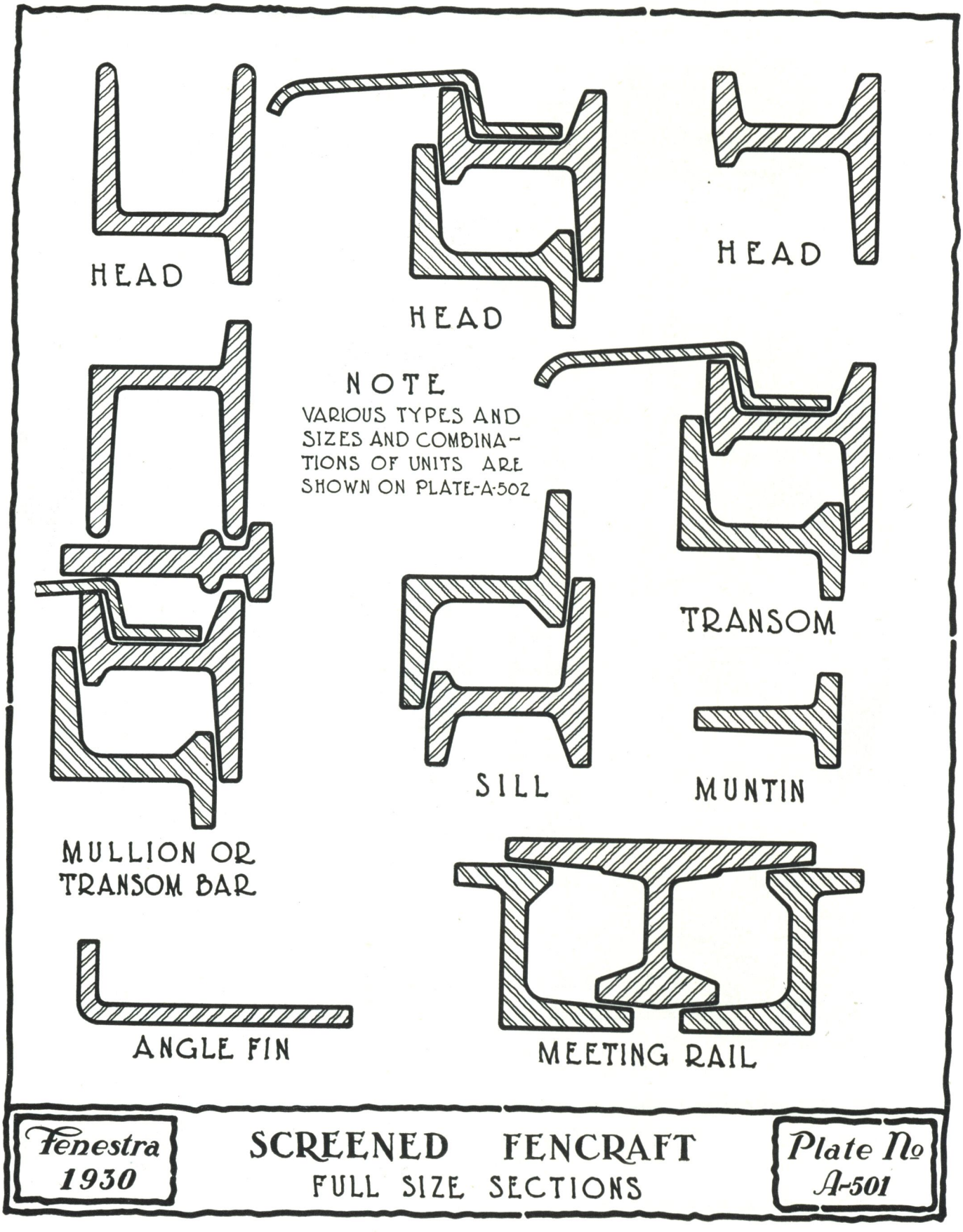
Thru-Screen Operator - No. 1116

Fenestra 1930

SCREENED FENCRAFT HARDWARE

Plate No A-504

Continued on next page

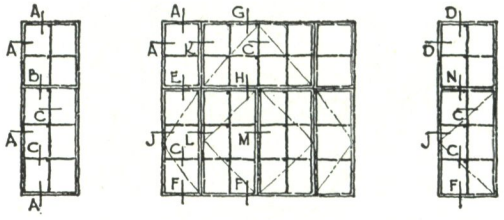


Fenestra 1930

SCREENED FENCRAFT
FULL SIZE SECTIONS

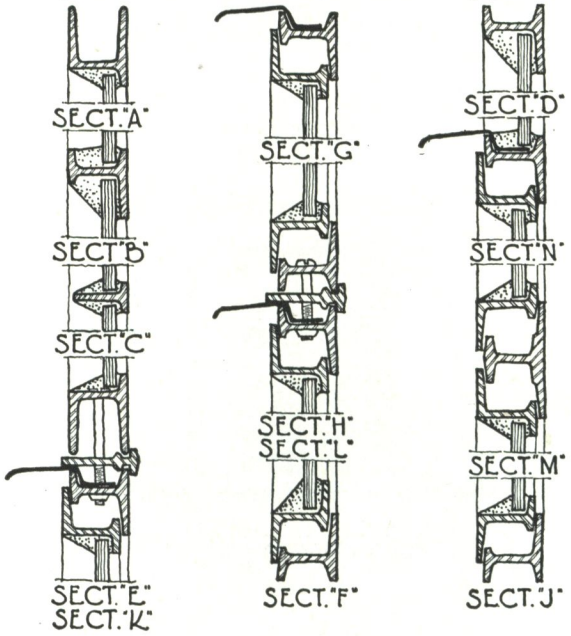
Plate No A-501

Continued on next page



TYPICAL ELEVATIONS

(DRIP IS OMITTED ON SECTIONS "K" & "L")



NOTES

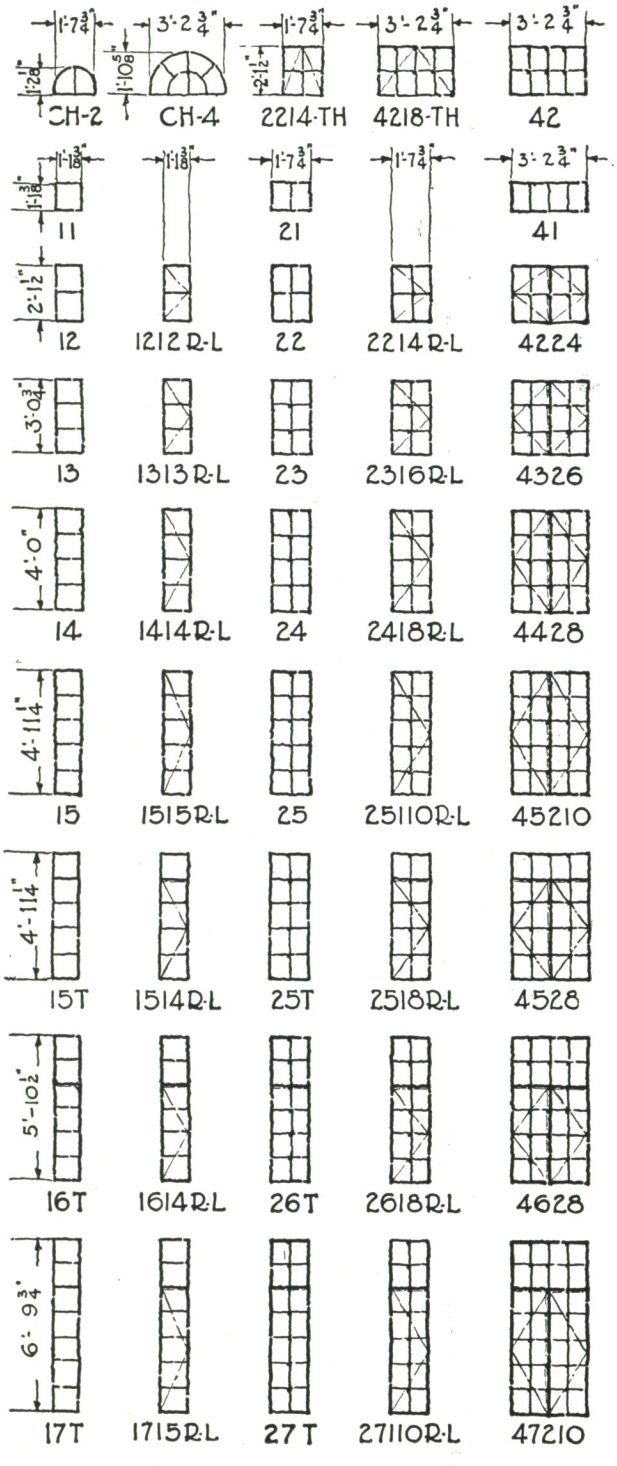
SIZES GIVEN ARE OPENING SIZES AND ARE 1/4" LARGER THAN WINDOW DIMENSIONS~NOTHING NEED BE ADDED FOR STEEL MULLIONS.

HANDING OF CASEMENTS IS DETERMINED BY LOCATION OF HINGE VIEWED FROM OUTSIDE~RIGHT HAND CASEMENTS ARE HINGED AT RIGHT AND LEFT HAND CASEMENTS ARE HINGED AT LEFT

WHEN FENCRAFT CASEMENTS ARE DIVIDED BY MUNTINS GLASS SIZES ARE FIGURED FROM A BASIC SIZE OF 8"×11"

R-RIGHT HAND CH-CIRCULAR HEAD T-{FIXED UNIT WITH TRANSOM BAR
L-LEFT HAND TH-TOP HINGED

ALL TYPES MAY BE FURNISHED WITH OR WITHOUT MUNTINS



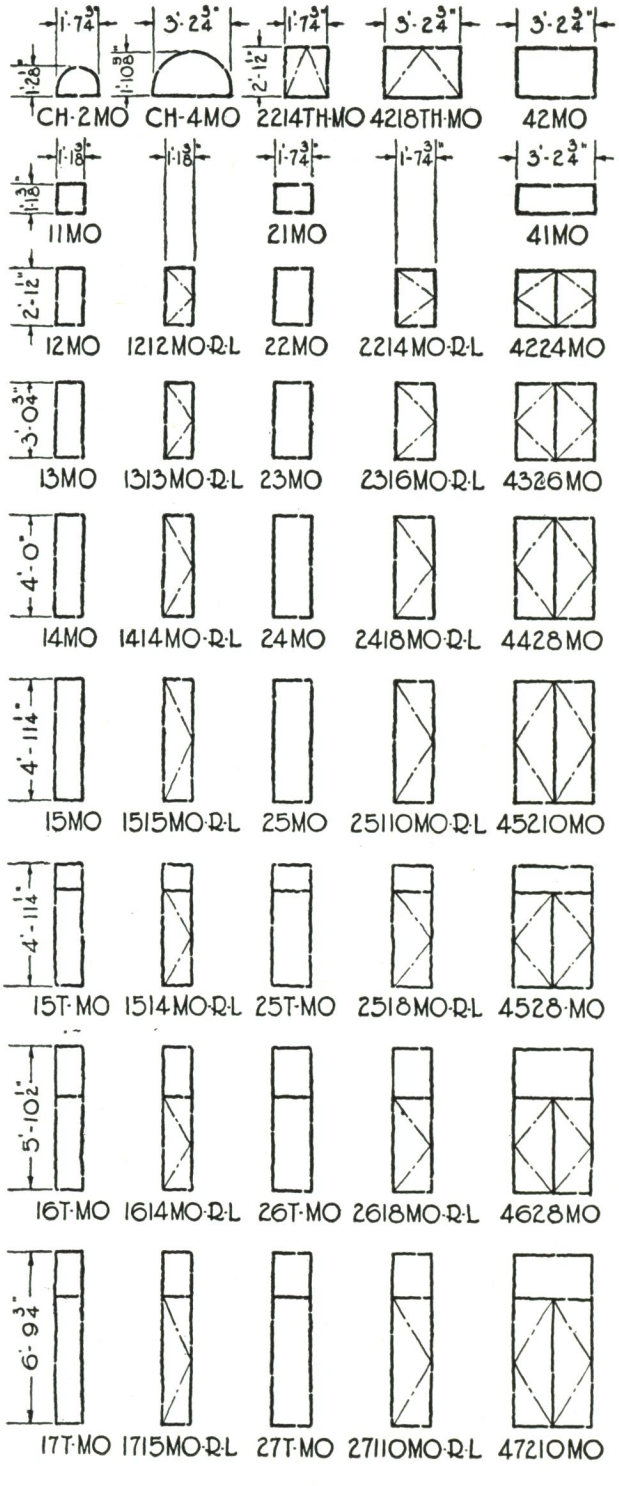
Fenestra 1930

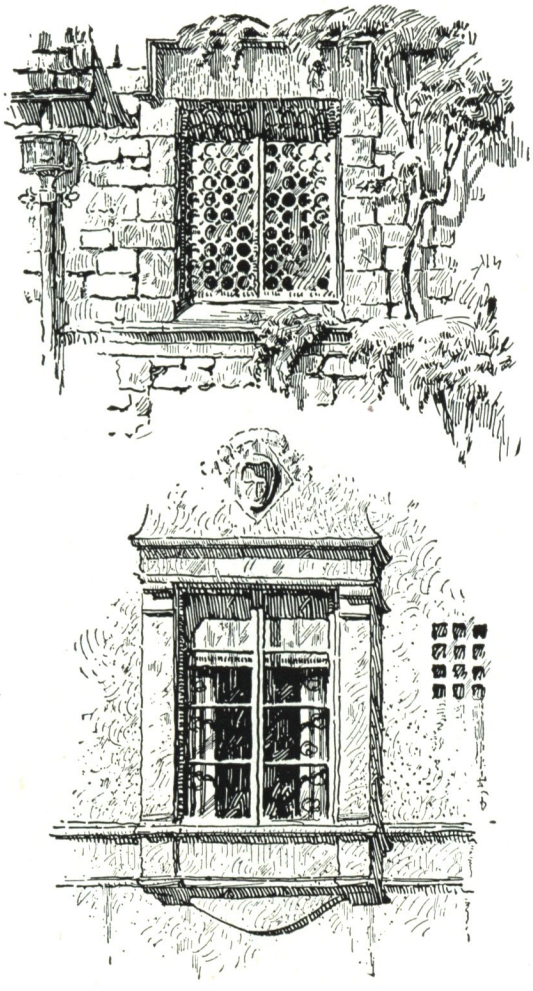
SCREENED FENCRAFT

TYPES AND SIZES AND COMBINATION DETAILS

Plate No A502

Continued on next page





FENCRAFT SYMMETRICAL WIDTHS

OPENING WIDTH	LIGHTS WIDE	NO. UNITS	TYPES OF UNITS	NO. MULL.
1'-1⅜"	1	1	1	0
1'-7¾"	2	1	2	0
2'-2¾"	2	2	1,1	1
3'-2¾"	4	1	4	0
3'-3½"	4	2	2,2	1
3'-4⅛"	3	3	1,1,1	2
3'-10½"	4	3	1,2,1	2
4'-4⅞"	5	3	2,1,2	2
5'-5½"	6	3	1,4,1	2
4'-11¼"	6	3	2,2,2	2
6'-5½"	8	2	4,4	1
6'-6¼"	8	3	2,4,2	2
6'-7"	8	4	2,2,2,2	3

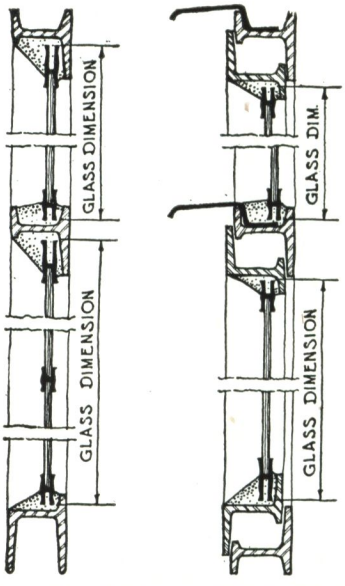
Fenestra 1930

FENCRAFT CASEMENTS

TYPES AND SIZES - WITHOUT MUNTINS

Plate No. A-509

Continued on next page



LEAD CAMES USED WITH VARIOUS SASH SECTIONS

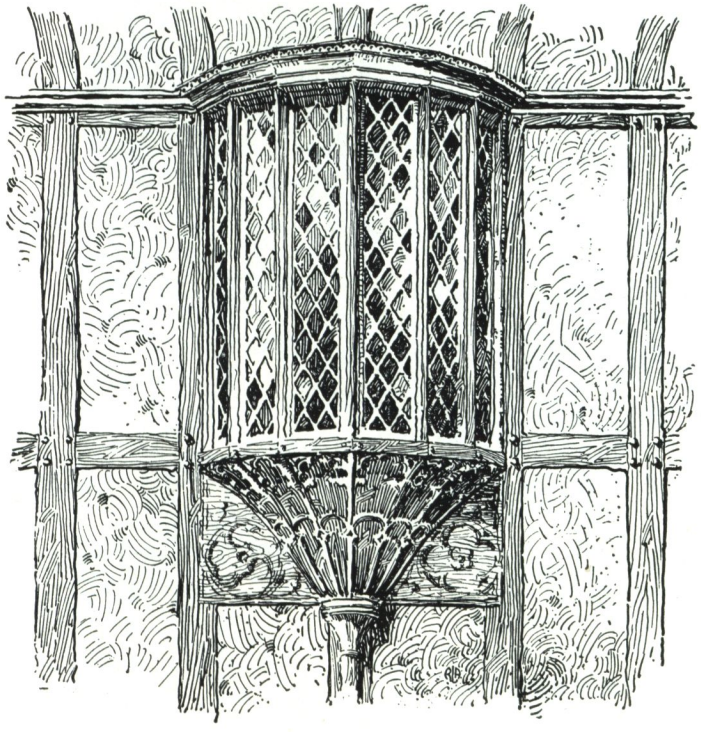
NOTES

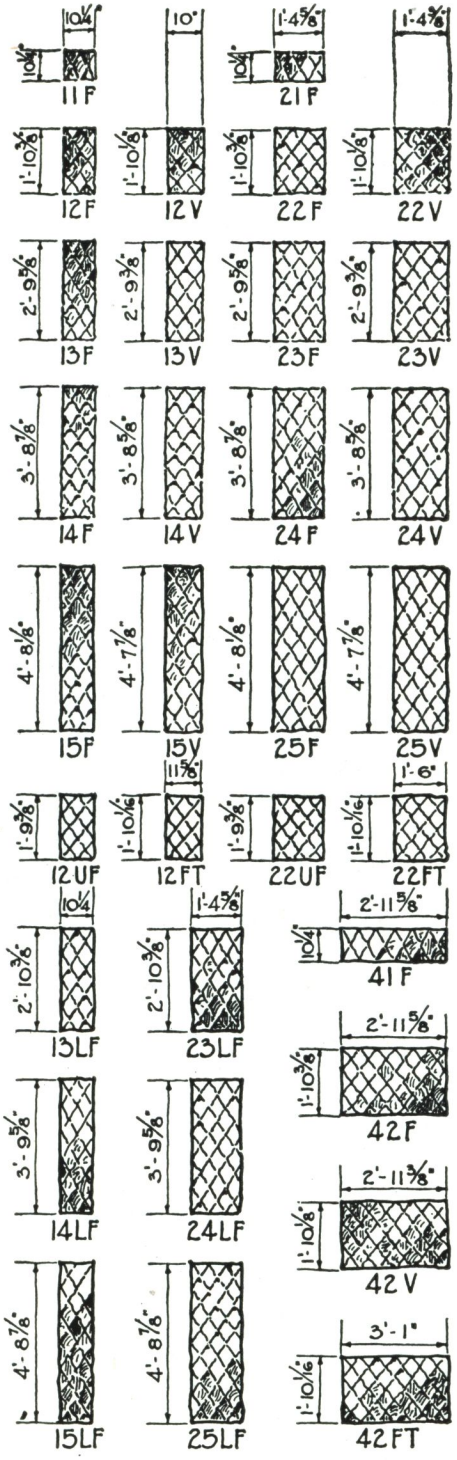
LEADED GLASS IS NOT FURNISHED BY DETROIT STEEL PRODUCTS COMPANY.

PANELS SHOWN ARE SUGGESTIONS FOR PURCHASE LOCALLY TO FIT STOCK FENCRAFT TYPES WITHOUT MUNTINS. DIAMOND LEADED OR RECTANGULAR LEADED PANELS OR PLATE GLASS OF SIZES SHOWN WILL FIT WITH 1/8" CLEARANCE ON ALL SIDES.

EXPLANATION OF NOMENCLATURE

"F"- PANEL FOR FIXED UNIT.
"V"- PANEL FOR VENTILATOR UNIT.
"UF"- UPPER PANEL OF COMBINED FIXED UNIT
"LF"- LOWER PANEL OF COMBINED FIXED UNIT
"FT"- FIXED TRANSOM PANEL OVER VENTILATED UNIT.



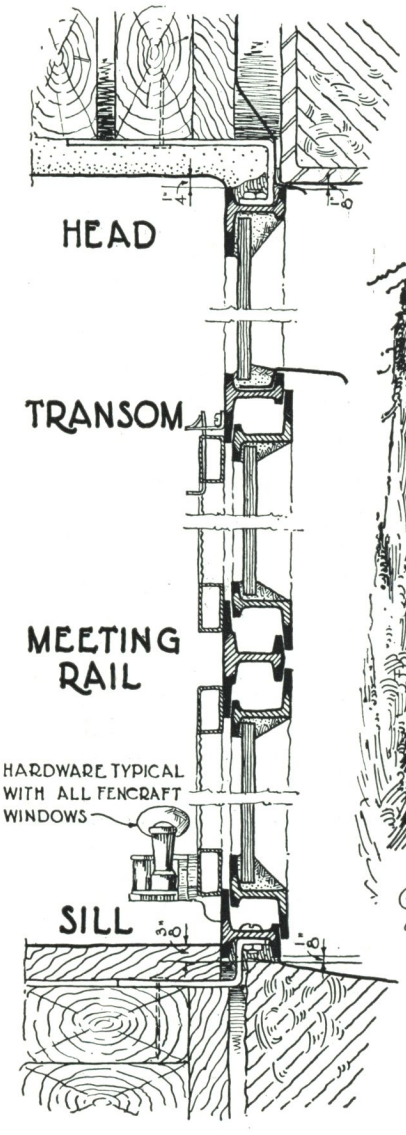


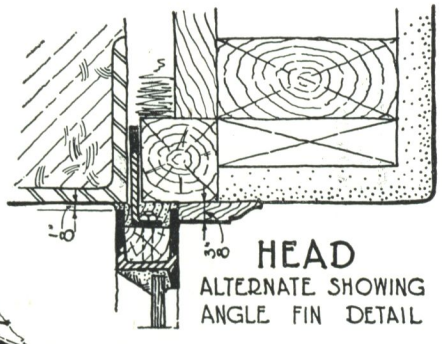
Fenestra 1930

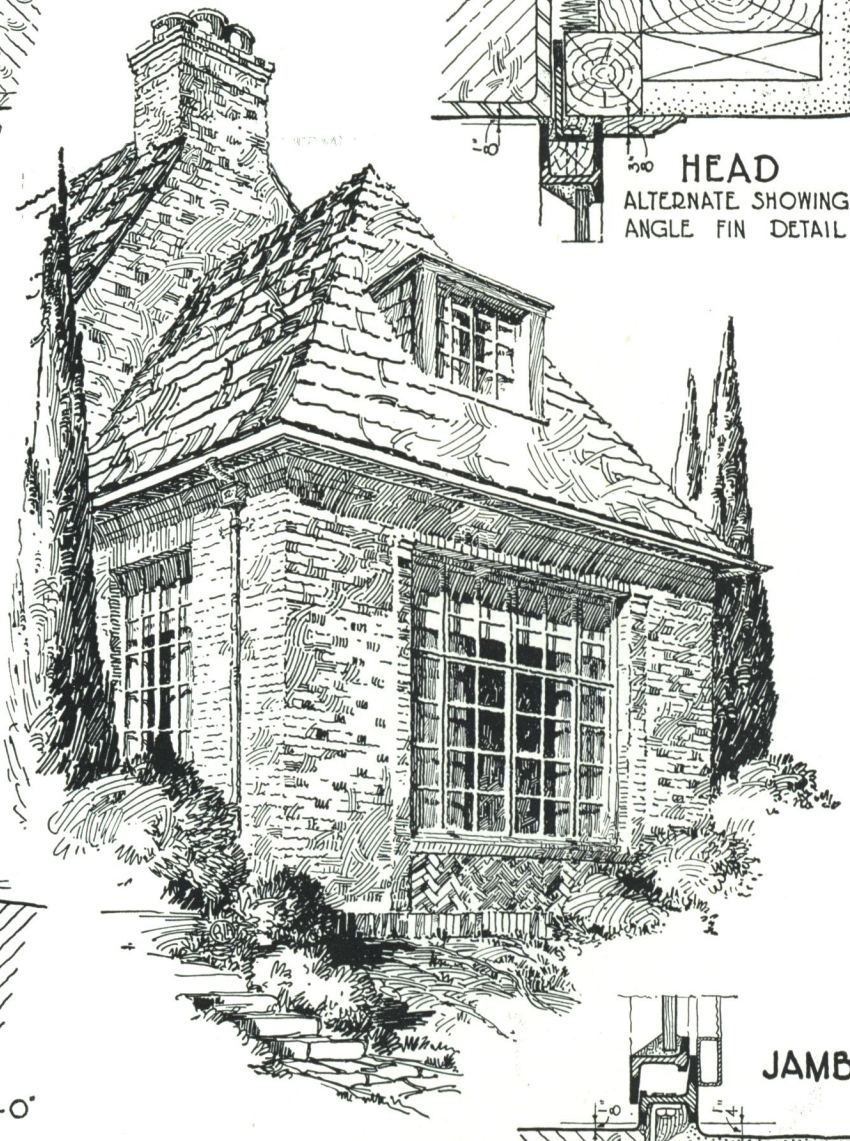
SCREENED FENCRAFT
SUGGESTIONS FOR LEADED GLASS

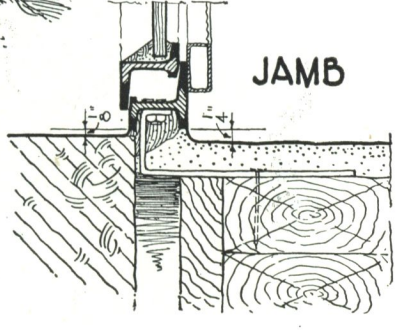
Plate No. A 503

Continued on next page









SCALE OF DETAILS - 3"-1'-0"

FULL SIZE SECTIONS, STANDARD TYPES, SIZES AND COMBINED UNITS WITH DETAILS ARE SHOWN ON PLATES NOS. A-501 AND A-502.

SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK

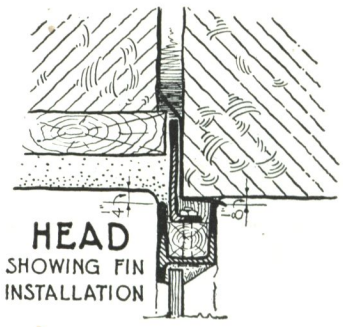
SCREEN HARDWARE SHOWN IS TYPICAL FOR ALL SASH

Fenestra 1930

SCREENED FENCRAFT BRICK VENEER INSTALLATION

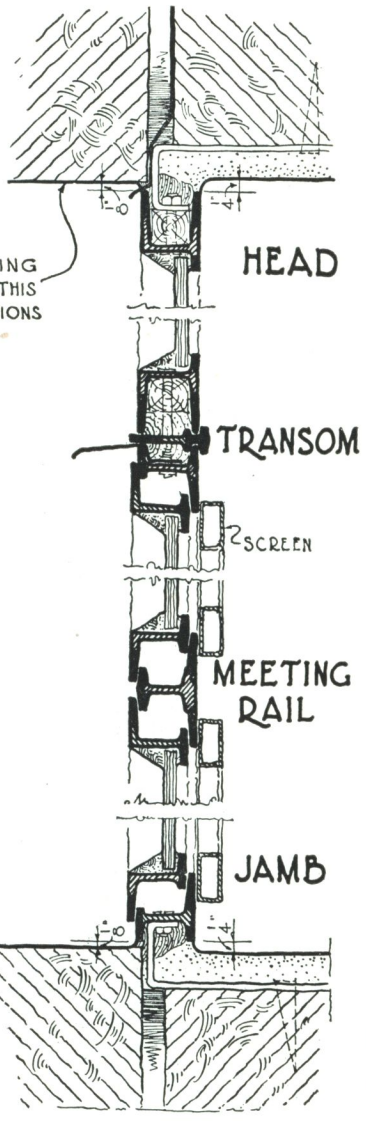
Plate No. A 505

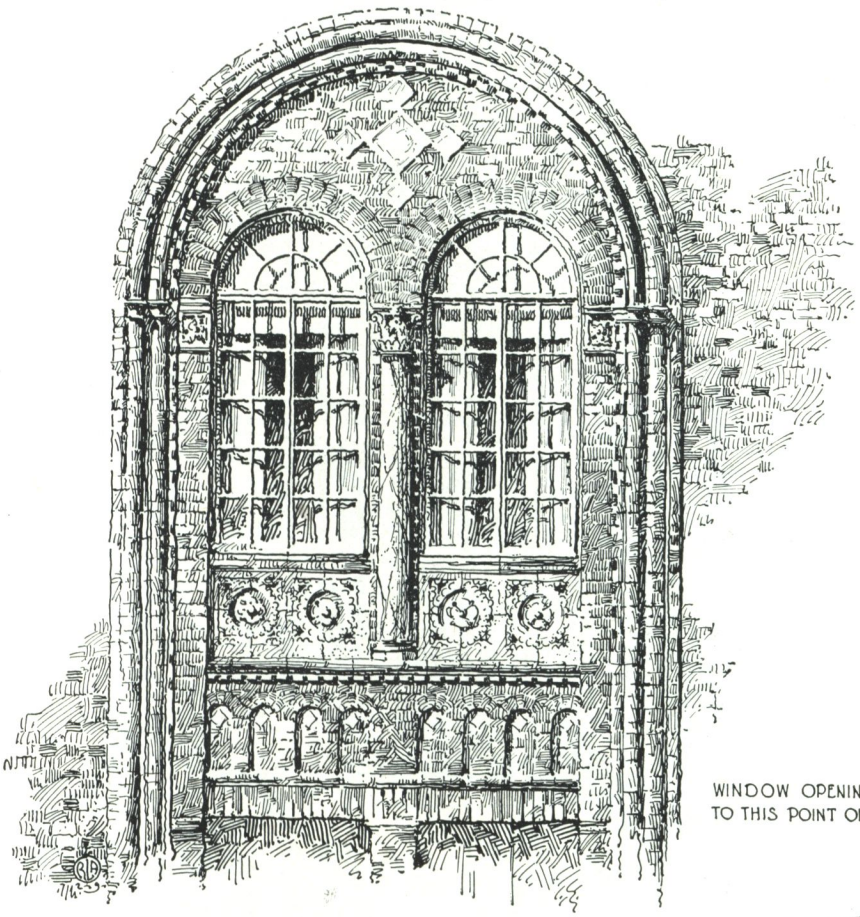
Continued on next page



HEAD
SHOWING FIN
INSTALLATION

SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK. AND CAULK ON OUTSIDE





FULL SIZE SECTIONS, STANDARD TYPES, SIZES AND COMBINED UNITS WITH DETAILS ARE SHOWN ON PLATES NUMBER A-501 AND A-502

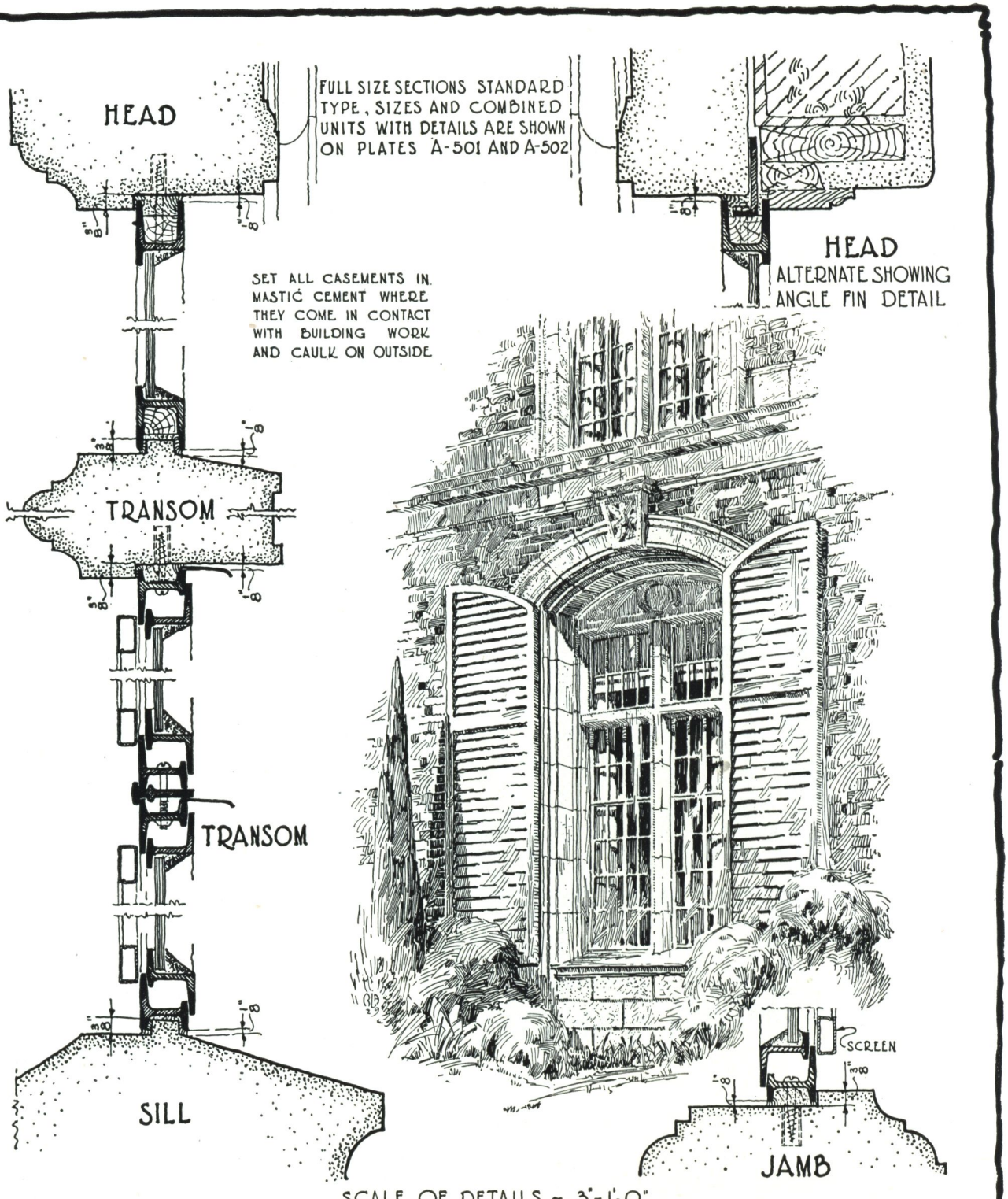
SCALE OF DETAILS - 3"=1'-0"

Fenestra 1930

SCREENED FENCRAFT BRICK - INSTALLATION

Plate No A 506

Continued on next page

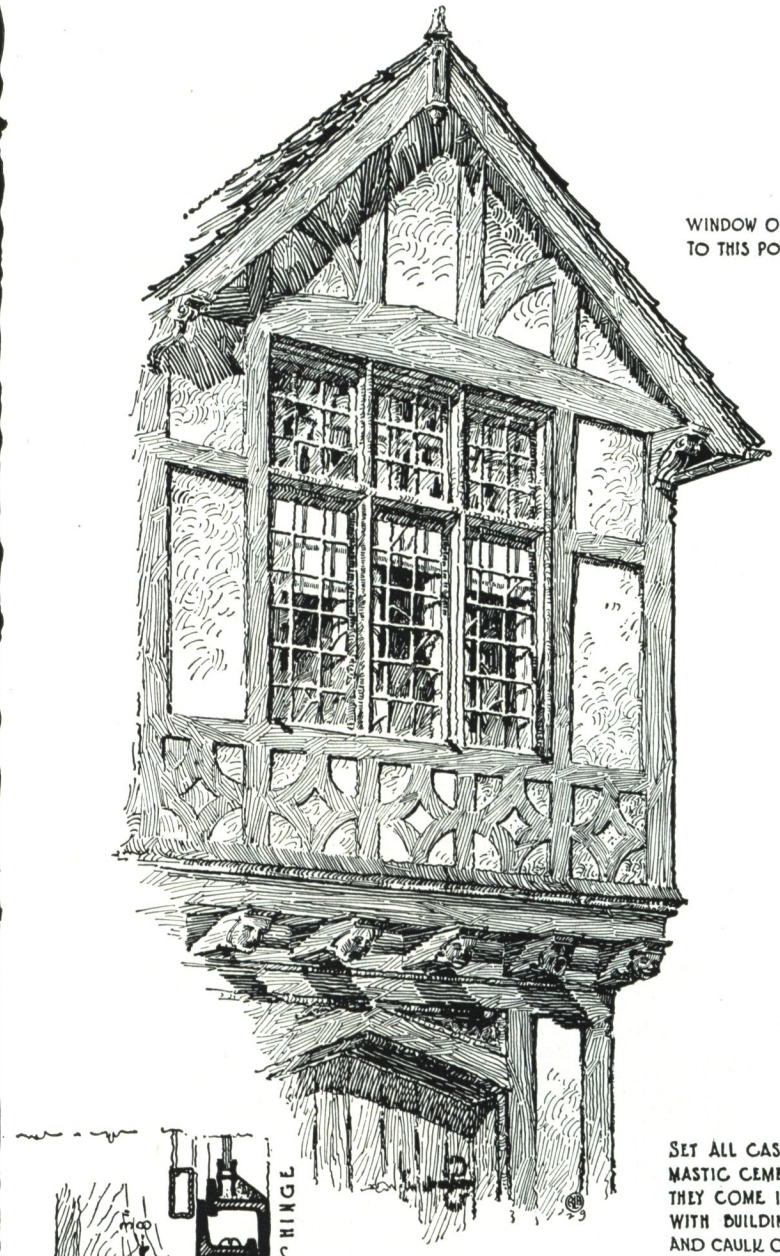


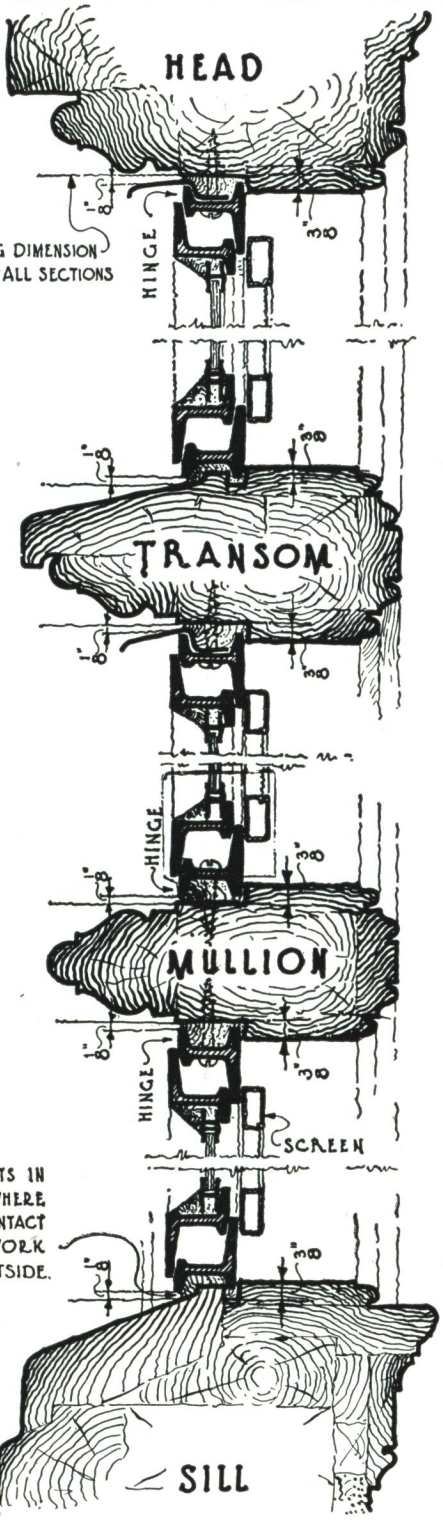
Fenestra 1930

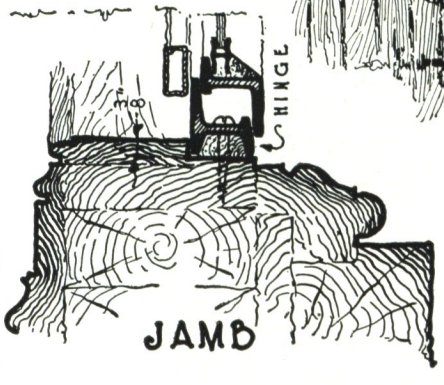
SCREENED FENCRAFT STONE INSTALLATIONS

Plate No A 507

Continued on next page







SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK AND CAULK ON OUTSIDE.

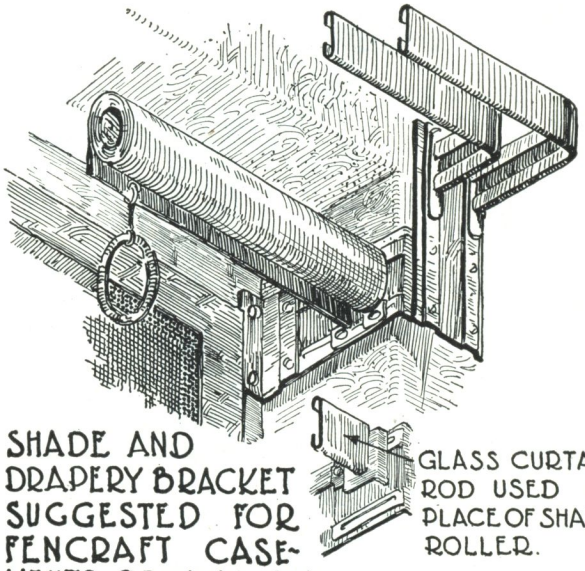
SCALE OF DETAILS 3"=1'-0"
FULL SIZE SECTIONS, STANDARD TYPES, SIZES AND COMBINED UNITS WITH DETAILS ARE SHOWN ON PLATES A-501 AND A-502

Fenestra 1930

SCREENED FENCRAFT WOOD INSTALLATION

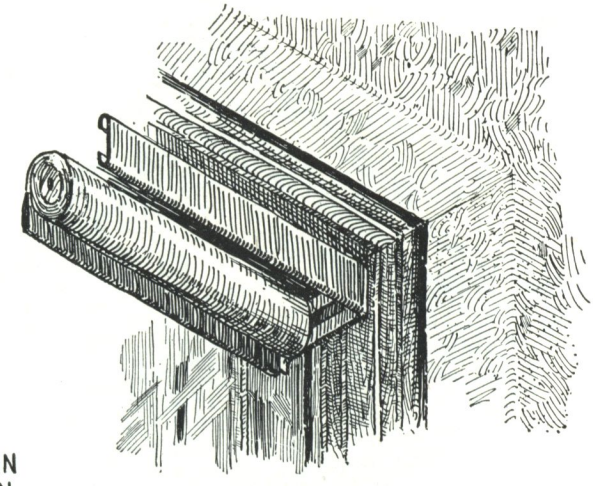
Plate No. A 508

Continued on next page



SHADE AND DRAPERY BRACKET SUGGESTED FOR FENCRAFT CASEMENTS OPENING OUT

GLASS CURTAIN ROD USED IN PLACE OF SHADE ROLLER.



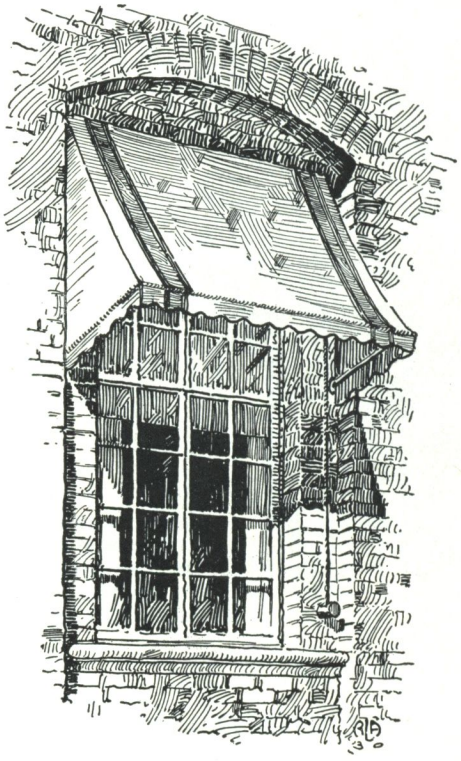
SHADE & DRAPERY BRACKET AND SUGGESTED ATTACHMENT TO OPEN IN SWING LEAVES.

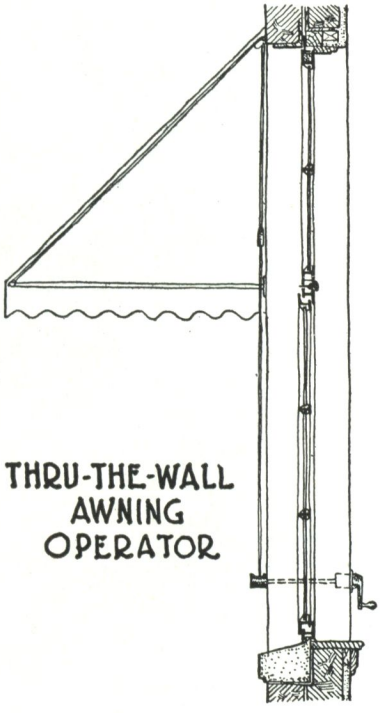
NOTES

SCREENED CASEMENTS ARE DRILLED FOR ATTACHMENT OF SHADE & DRAPERY BRACKETS, BUT NEITHER BRACKETS NOR AWNING OPERATORS ARE FURNISHED BY DETROIT STEEL PRODUCTS COMPANY.

AT EXTRA COST OPEN IN CASEMENTS MAY BE DRILLED AND TAPPED IN THE FIELD FOR ATTACHMENT OF SHADE AND DRAPERY BRACKETS DIRECT TO THE SWING LEAVES.

LEAVE MINIMUM CLEARANCE OF 2" FROM SASH TO REVEAL IF BRACKET IS ATTACHED TO OPEN IN LEAF. SEE PLATE NO. A-303.





THRU-THE-WALL AWNING OPERATOR

VERTICAL SECTION.

Fenestra 1930

FENCRAFT CASEMENTS

DRAPING & AWNING OPERATOR SUGGESTIONS

Plate No. A-510

Continued on next page

FENESTRA "FENCRAFT" CASEMENTS

Solid section, steel casement windows with swing leaves opening out on extension, bronze bearing, friction hinges. Designed without Fenestra screens though any other accepted method of screening may be used. Solid bronze or nickel silver hardware with a selection from four finishes. Arranged for leaded or plate glass or made with interior muntins if desired. Full sized details same as Fenestra Screened Fencraft Windows

SPECIFICATIONS

For nomenclature of individual types refer to standard drawings or price sheets obtainable from local Fenestra representatives.

Notes are explanatory and need not be included in specifications.

GENERAL

Windows shall be Fenestra Fencraft as manufactured by Detroit Steel Products Company.

MATERIAL

(Note:—Same as the Material Specifications for Screened Fencraft Windows except that Fenestra Screens are not supplied.)

CONSTRUCTION

(Note:—Same as the Construction Specifications for Screened Fencraft Windows.)

ATTACHED HARDWARE

(Note:—Attach at the factory.)

SIDE HINGES—All side hung swing leaves shall be hung on two heavy, extension (cleaning) friction hinges of special, solid rolled, sherardized steel with heavy fillets in re-entrant angles. Each hinge shall be equipped with two friction washers. Washers and hinge members shall be held by lock washers and a bronze stud with acorn nut, so designed that friction may be increased or decreased by adjusting the nut.

(Note:—"Close-In" hinges supplied when specified.)

TOP HINGES—All top hung swing leaves shall be hung on heavy, flush, extruded bronze hinges with bronze hinge pins.

LOCKING HANDLE BRACKET—Each side hung swing leaf shall have an ornamental locking handle bracket of solid rolled steel, electrically welded to the swing leaf stile.

(Note:—Locking handle brackets for Fencraft Casements will be attached at the factory.)

STRIKES—All handles shall lock against strikes attached to the casement frame.

DETACHED HARDWARE

All detached hardware shall be shipped carefully packed to prevent damage until applied for use.

LOCKING HANDLES—All locking handles on side hung swing leaves, shall be of solid bronze (U. S. Government specification), of ornamental design and coinage finish obtained without the use of plating or chemicals. Each handle to be equipped with a concealed coil spring to take up wear and prevent rattle, and to be attached to swing leaf stile by three bronze screws. No. 1119.

(Note:—Bronze double locking device where necessary at added cost.)

(Note:—At extra cost, special finishes may be secured: "Scaly," "Coarse Sand," or "Hammered" in either bronze or nickel silver; or Chromium-Plated in bronze only.)

OPERATOR

FOR SIDE HUNG SWING LEAVES—(1) Standard.

(Note:—Friction hinges without operator are standard.)

(2) Optional — Solid bronze thumbscrew operator, No. 1101, with non-friction hinges.

(3) Optional—Solid bronze gear type operator, No. 385, with non-friction hinges.

(Note:—Nos. 2 or 3 at extra cost over No. 1.)

FOR TOP HUNG SWING LEAVES the operator shall consist of a solid bronze peg and stay. No. 1110.

(Note:—Special finishes corresponding with special handle finishes may be had at extra cost.)

MASTIC

(Note:—Same as the Mastic Specifications for Screened Fencraft Windows.)

ERECTION

(Note:—Same as the Erection Specifications for Screened Fencraft Windows.)

PAINTING

(Note:—Same as the Painting Specifications for Screened Fencraft Windows.)

GLASS AND GLAZING

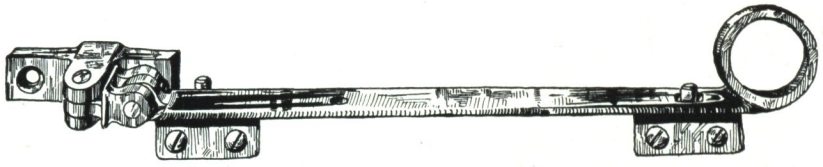
(Note:—Same as the Glass and Glazing Specifications for Screened Fencraft Windows.)

SCREENING AND SHADING

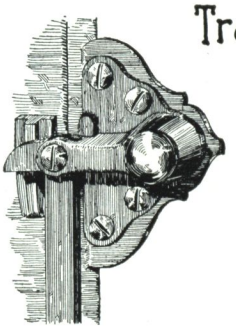
(Note:—Fenestra Screens are not furnished, but sliding, rolling, hinged or any accepted method of screening casements may be used. If desired, so specify. Minimum distance for clearance of hardware, 2½".)

(Note:—Shading Specifications same as Shading Specifications for Screened Fencraft Casements.)

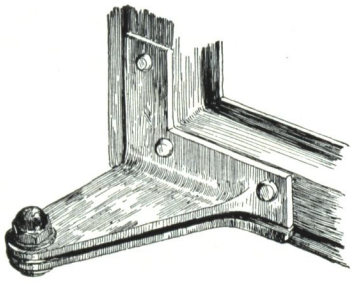
Continued on next page



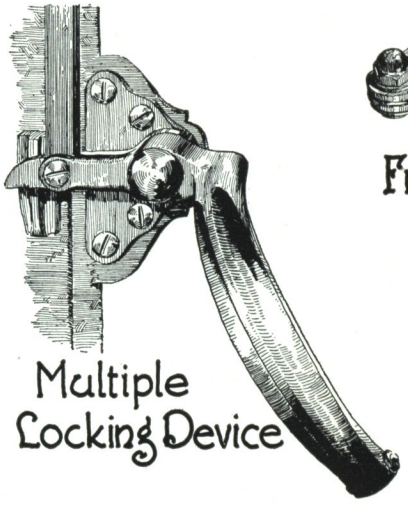
Transom Peg Stay
No. 1110



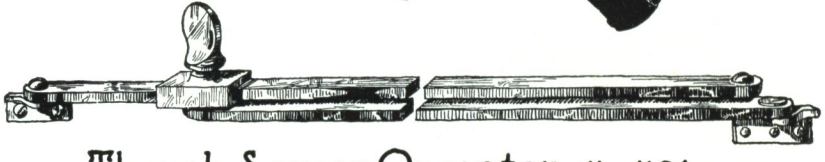
Handle
No. 1119



Friction Hinge



Multiple
Locking Device



Thumb Screw Operator - No. 1101

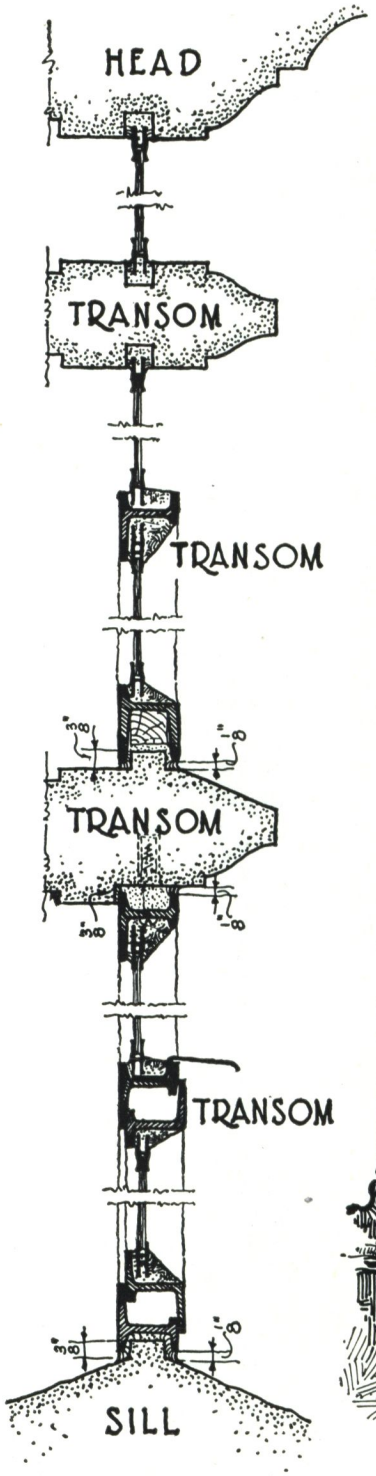
Underscreen Operator
No. 385

Fenestra 1930

FENCRAFT CASEMENTS HARDWARE

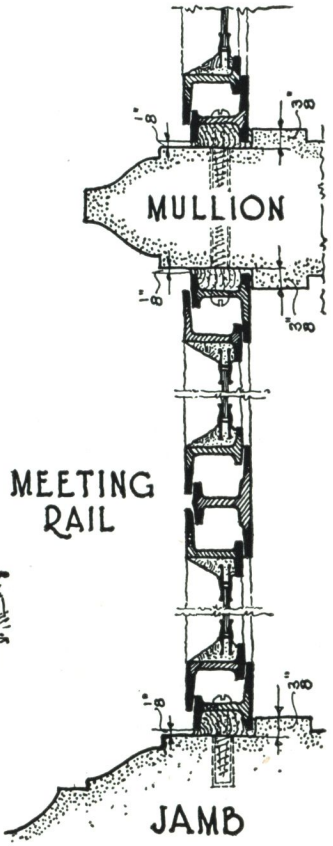
Plate No. A-401

Continued on next page



NOTE -
SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK.

FULL SIZE SECTIONS STANDARD TYPES, AND COMBINED UNITS WITH DETAILS ARE SHOWN ON PLATES NO - A-501 AND A-502



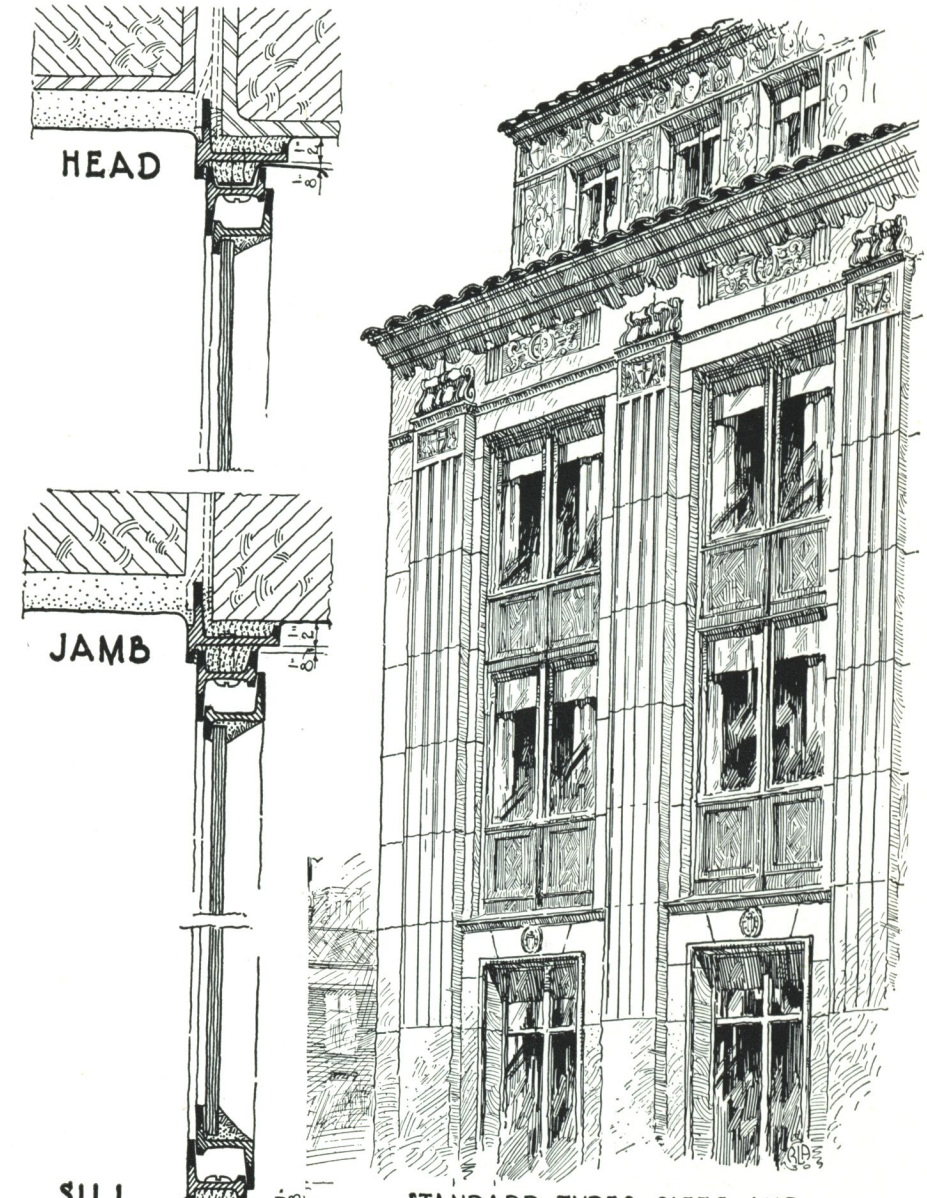
SCALE OF DETAILS - 3"=1'-0"

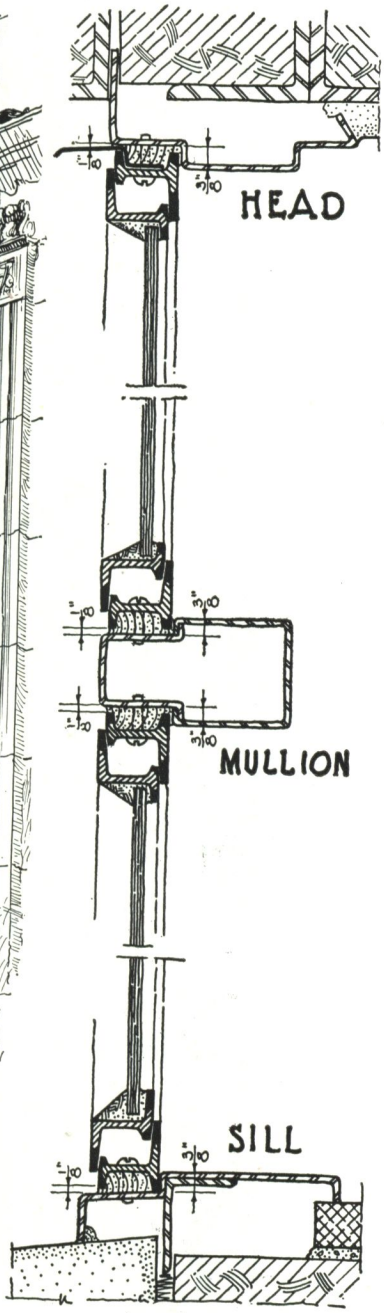
Fenestra 1930

FENCRAFT CASEMENTS STONE INSTALLATION

Plate No A-402

Continued on next page





STANDARD TYPES, SIZES AND COMBINED UNITS WITH DETAILS ARE SHOWN ON PLATE A-502

SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK.

SCALE OF DETAILS - 3"-1'-0"

Fenestra 1930

FENCRAFT CASEMENTS

HEAVY STEEL SUB-FRAME INSTALLATION

Plate No A-405

Continued on next page

"FENCRAFT" CASEMENTS—OPEN IN

Solid section, steel casement windows with swing leaves opening in on extruded bronze flush hinges and held by concealed bronze friction adjusters. Solid bronze or nickel silver hardware with a selection of four different finishes. Designed without muntins, if desired, to accommodate leaded or plate glass. No Fenestra screens supplied but outside screens may be used

SPECIFICATIONS

For nomenclature of individual types refer to standard drawings or price sheets obtainable from local Fenestra representatives.

Notes are explanatory and need not be included in specifications.

GENERAL

Windows shall be Fenestra Fencraft, open in, as manufactured by Detroit Steel Products Company.

STANDARD TYPES

(Note:—Standard types are: CH2, 22, 2214R-L, 23, 2316R-L, 24, 2418R-L, 25, 25-1-10R-L as shown on Screened Fencraft Plates A-502 and A-509, and Type 2214 Bottom Hung.)

MATERIAL

(Note:—Same as the Material Specifications for Screened Fenestra Fencraft Windows except that Fenestra Screens are not supplied.)

CONSTRUCTION

(Note:—Same as the Construction Specifications for Screened Fencraft Windows.)

ATTACHED HARDWARE

(Note:—Attach at the factory.)

SIDE AND BOTTOM HINGES—All side hung and all bottom hung swing leaves shall be hung on heavy extruded bronze flush hinges with bronze hinge pins.

(Note:—This provides 100 per cent bronze bearing.)

LOCKING HANDLE BRACKET—Each side hung swing leaf shall have an ornamental locking handle bracket of solid rolled steel, electrically welded to the swing leaf stile.

(Note:—Locking handle brackets on Fencraft Open-In Casements will be attached at the factory.)

DETACHED HARDWARE

All detached hardware shall be shipped carefully packed to prevent damage until applied for use.

LOCKING HANDLES on side hung swing leaves shall be of solid bronze (U. S. Government specification) of ornamental design and coinage finish obtained without the use of plating or chemicals. Each handle shall be equipped with a concealed coil spring to take up wear and prevent rattle, and shall be attached to the swing leaf by three bronze screws. (Handle 1119.)

(Note:—At extra cost, special finishes may be secured: "Scaly," "Coarse Sand," or "Hammered" in either bronze or nickel silver; or Chromium-Plated in Bronze only.)

(Note:—Multiple locking device in bronze where necessary, at added cost.)

LOCKS FOR BOTTOM HUNG SWING LEAVES shall be solid bronze spring latches with pole hook ring handles, attached to top rail of swing leaves. (Handle 739.)

KEEPERS—All handles on side hung swing leaves and spring catches on bottom hung leaves shall lock into malleable iron keepers attached to the casement frame.

FRICTION ADJUSTER—Each side hung swing leaf shall be equipped with one flat type friction adjuster consisting of a solid bronze arm, and sliding, adjustable friction shoe moving in a bronze channel attached to the head of the frame and the head of the swing leaf in such a manner as to be entirely concealed when the window is closed.

SIDE ARMS—All bottom hung swing leaves shall have two friction side arms designed with solid bronze arms and sliding, adjustable friction shoes moving in bronze channels attached to the frame members.

OPERATORS

(Note:—No operator is necessary with side hung swing leaves open in or with bottom hung swing leaves open in.)

MASTIC

(Note:—Same as the Mastic Specifications for Screened Fencraft Windows.)

ERECTION

(Note:—Same as the Erection Specifications for Screened Fencraft Windows.)

PAINTING

(Note:—Same as the Painting Specifications for Screened Fencraft Windows.)

GLASS AND GLAZING

(Note:—Same as the Glass and Glazing Specifications for Screened Fencraft Windows.)

SCREENING AND SHADING

(Note:—Outside screens, if used, should be kept 1½" from the outside face of the window to clear sill drip.)

(Note:—Care should be taken to attach shade and drapery brackets to the building construction in such a manner as to clear all open-in swing leaves. At extra cost, the casements may be drilled in the field so that roller shades or glass curtains may be attached directly to the swing leaves. When this is done, jambs should be kept back a minimum of 2" from the window on the inside so swing leaves will open without fouling. See plate A-303.)

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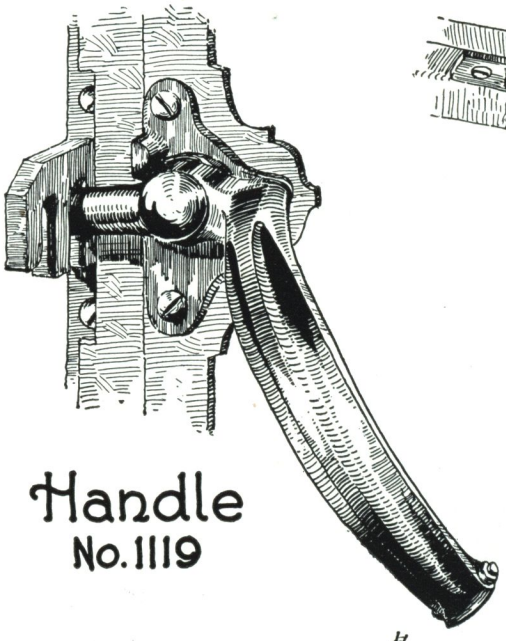
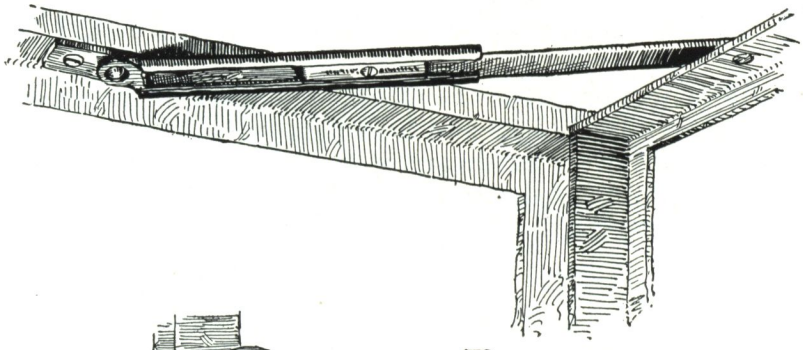
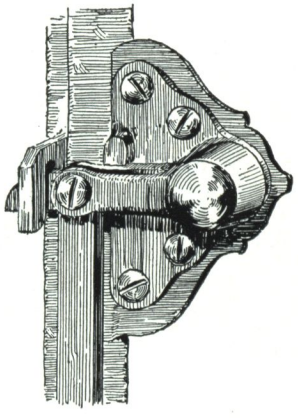
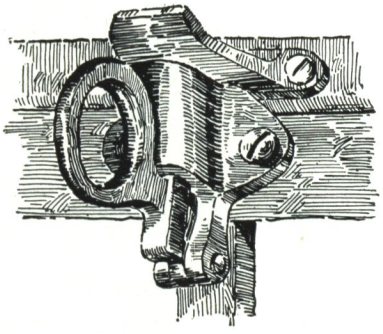


Handle
No. 1119

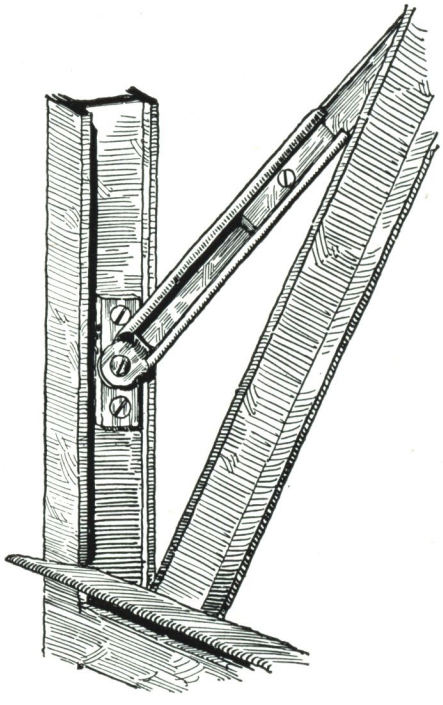


Friction Adjuster

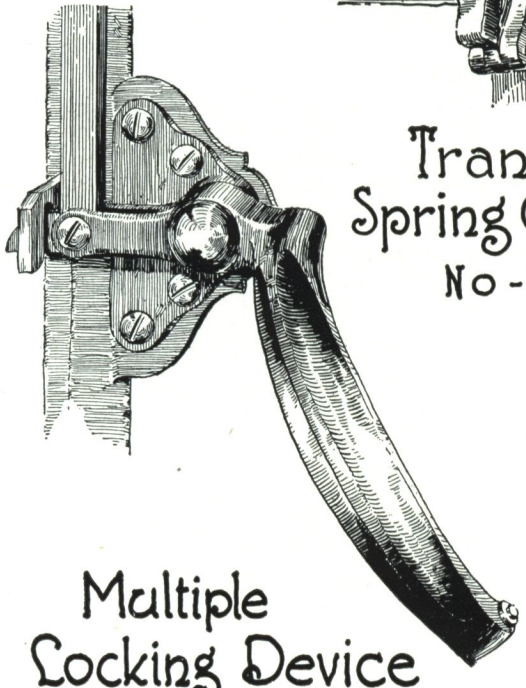




Transom Spring Catch
No-739



Friction Side Arm



Multiple Locking Device

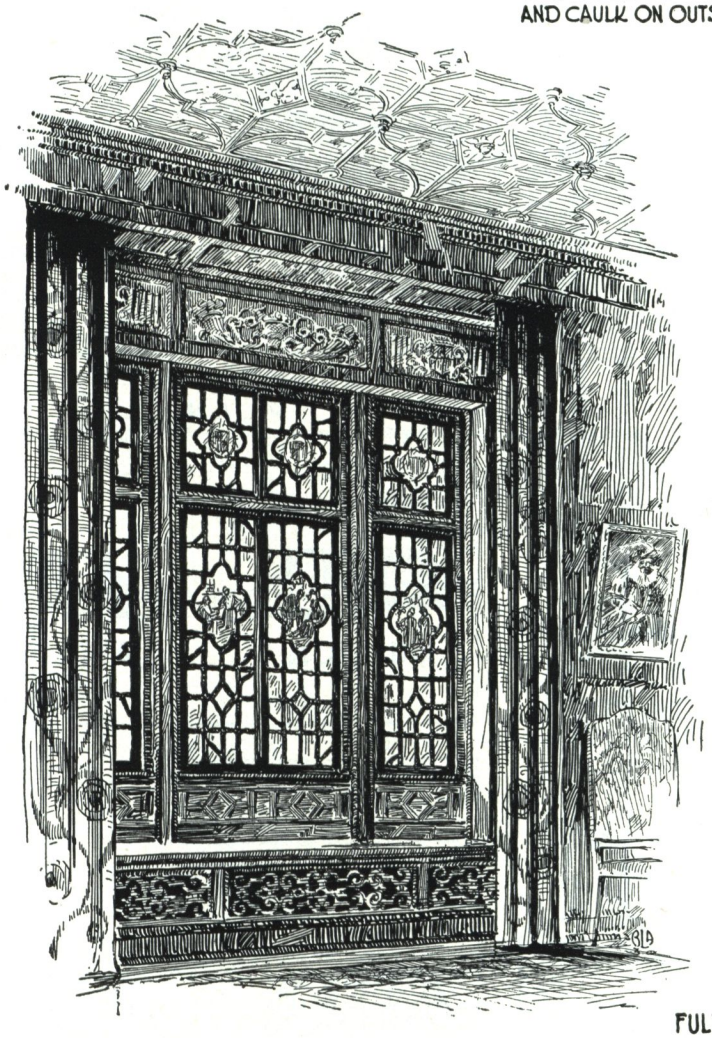
Fenestra 1930

FENCRAFT OPEN IN HARDWARE

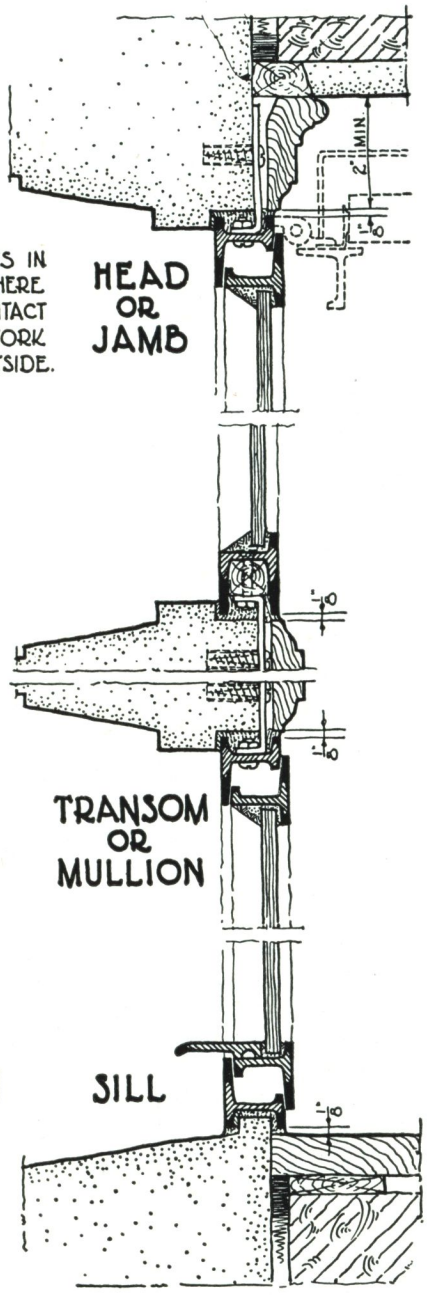
Plate No A-301

Continued on next page

A MINIMUM DIMENSION OF 2" FROM SASH TO REVEAL AT JAMB IS REQUIRED FOR CLEARANCE WHEN SHADE AND DRAPERY BRACKET IS ATTACHED TO SWING LEAF. SEE DETAIL AT RIGHT.



SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK AND CAULK ON OUTSIDE.



SCALE OF DETAILS - 3"-1'-0"

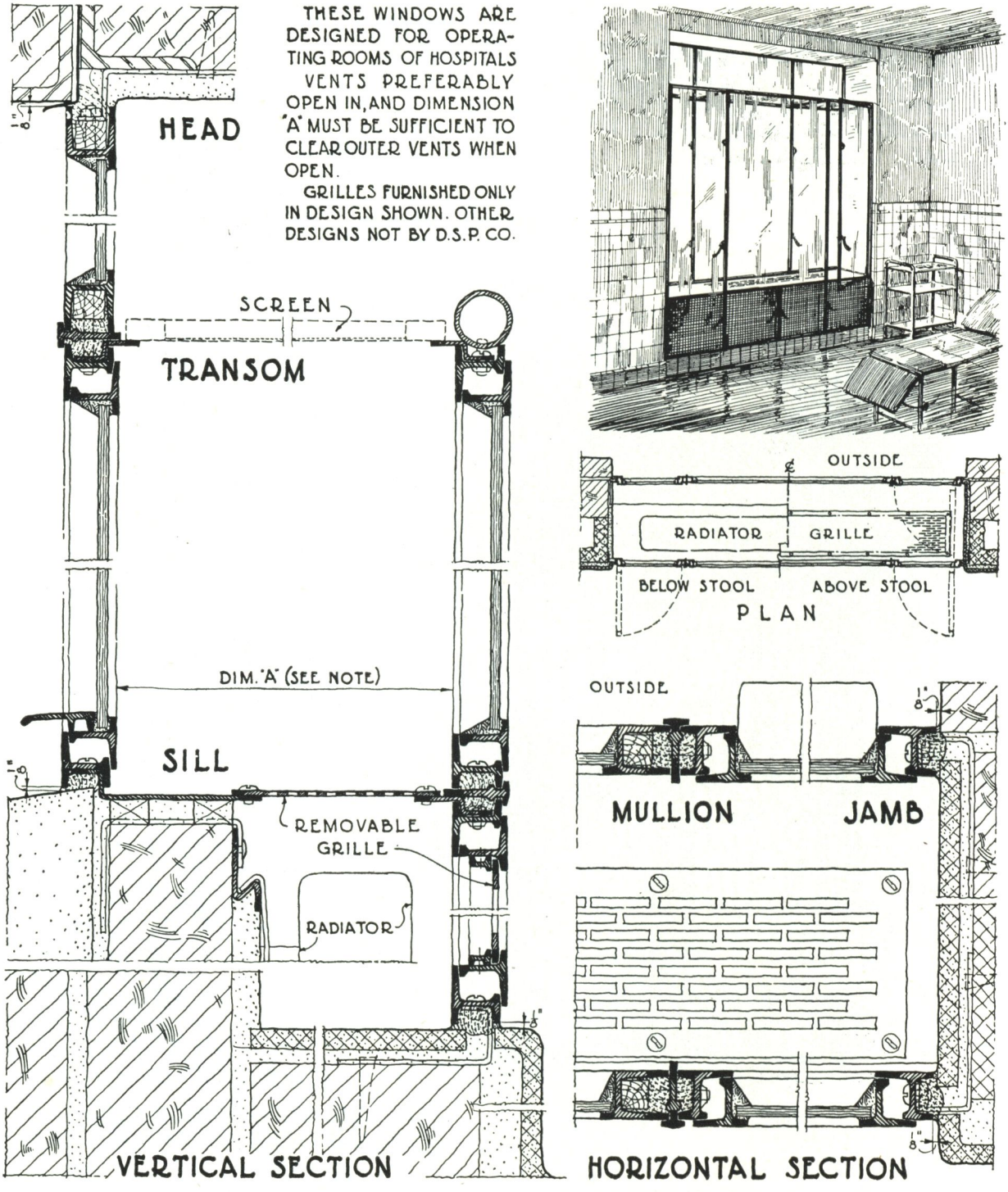
FULL SIZE SECTIONS AND STANDARD TYPES AND SIZES ARE SHOWN ON PLATE-A-302.

Fenestra 1930

FENCRAFT OPEN IN TYPICAL INSTALLATION

Plate No A-303

Continued on next page

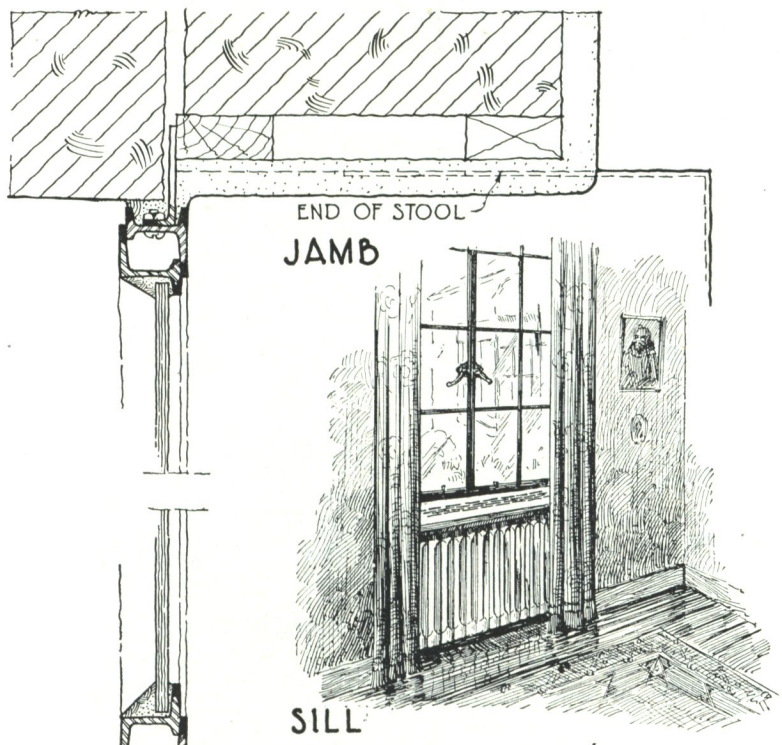


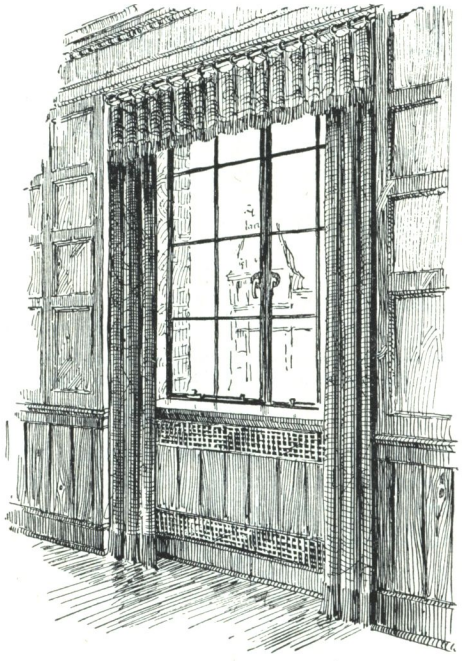
Fenestra 1930

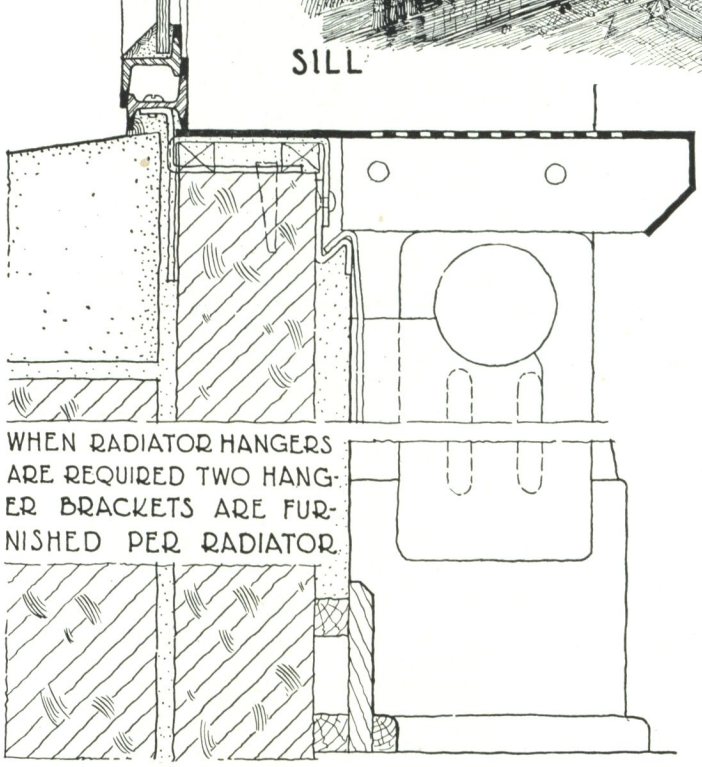
FENCRAFT OPEN IN OPERATING ROOM INSTALLATION.

Plate No A-304

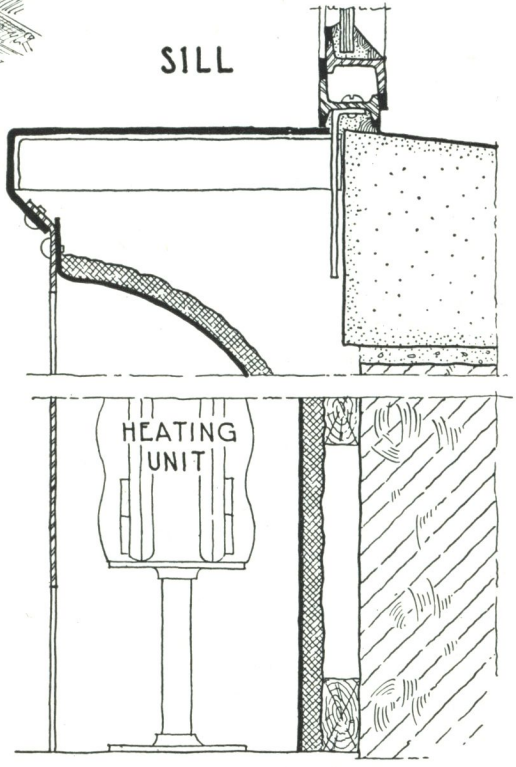
Continued on next page







SECTION THROUGH STOOL SHOWING RADIATOR RECESSED IN WALL



SECTION THROUGH STOOL SHOWING CONCEALED RADIATION

Fenestra 1930

FENCRAFT CASEMENTS
METAL STOOL SUGGESTIONS

Plate No A-406

Continued on next page

FENESTRA CASEMENT DOORS

SPECIFICATIONS

For nomenclature of individual types refer to standard drawings or price sheets obtainable from local Fenestra representatives.

Notes are explanatory and need not be included in specifications.

GENERAL

Doors shall be Fenestra (open in) or (open out) as manufactured by the Detroit Steel Products Company.

(Note:—Shop drawings from door manufacturer shall be submitted for architect's approval before starting fabrication.)

MATERIAL

All sections shall be specially designed, hot rolled, solid steel casement bars, individually gauged for straightness, with heavy fillets in all re-entrant angles.

FRAME MEMBERS shall be equal leg channel sections.

Swing leaf members shall be Z-shaped sections with baffles.

MUNTINS shall be T sections.

MULLIONS shall be Fenestra, hot rolled, solid steel, built-up sections, so designed as to form an interlocking assembly.

KICK PLATES shall be of 16-gauge sheet steel.

CONSTRUCTION

FRAMES AND SWING LEAVES shall be mitered and electrically welded at all corners. All exposed faces at welds shall be ground to a smooth finish. Provide continuous, two point, flat contact weathering between door leaves and frames.

MUNTINS shall be continuous from head to sill and from jamb to jamb, and so interlocked as to form a flat joint and increase strength and rigidity at each point of intersection. Joints at frame shall be mortise and tenon, air hammer riveted.

MULLIONS shall be provided between doors and Fenestra sidelights and transoms where these are shown on either side or above the door in the same opening.

Provide a continuous, heavy, electro-galvanized steel drip at the head of the frame on all open out doors.

Provide a continuous, heavy, non-corrosive extruded drip at the sill of the swing section on all open in doors.

Provide a double kick plate in lower section of door with wood inserted between 16-gauge steel sheets for sound deadener.

BRONZE THRESHOLD

(Note:—Extruded bronze threshold will be furnished by the door manufacturer at added cost if desired. Drawings will be submitted for architect's approval before fabrication.)

ATTACHED HARDWARE

(Note:—Attach at the factory.)

All door leaves shall be hung on three heavy bronze hinges of special design fitted with solid bronze hinge pins.

(Note:—Bronze pins provide 100% bronze bearing at all moving pivot points.)

LOCKING HANDLE—Ornamental solid bronze locking handles, No. 1059, with coinage finish shall be provided operating a concealed bronze cremone bolt which actuates three locking bolts, one each at head, sill, and center of door. Night latch shall be provided to lock doors from the inside.

(Note:—Night latch on inside and cylinder lock on outside or cylinder locks on both sides, supplied at extra cost.)

STRIKE PLATES—Provide solid bronze strike plates at top and bottom of doors.

FRICTION ADJUSTERS

(Note:—All doors are drilled and tapped for the attachment of friction adjusters, supplied at extra cost if desired.)

MASTIC

The door manufacturer shall furnish sufficient mastic to form a weather tight bond at head, sill, both jambs and mullions.

ERECTION

(Note:—Where desired, the Fenestra Construction Company, under a separate contract, will erect doors in prepared openings. If desired, so specify.)

(Note:—We recommend that all doors be installed in prepared openings. Where doors are built directly into the masonry, include in masonry specifications that mason shall use every precaution against springing or racking doors out of shape.)

All doors shall be set plumb and true, properly aligned, and securely anchored before glazing.

All mullions shall be rigidly bolted to the frame.

Set all frames in mastic, neatly applied where they come in contact with the building construction or steel mullions.

(Note:—Where doors are set directly into stone construction, apply one coat of shellac to stone to avoid stain by mastic.)

Necessary erection clips and wood screws for satisfactory installation, as shown on the detailed drawings, shall be furnished by the manufacturer at no added cost.

PAINTING

All doors shall receive one coat of rust-resisting primer and one coat of dark battleship gray paint at the factory—each coat to be sprayed on and baked separately.

(Note:—Finish coat should be applied after glazing.)

GLASS AND GLAZING

(Note:—The following should be included in the glass and glazing specifications:
"Glass shall be (⅛" light plate) (¼" thick plate). Single or double strength glass is not recommended."
"Putty shall be steel casement putty." This is a special high grade putty which assures quick setting. Ordinary wood window putty must not be used.)

All doors shall be glazed from the outside. All glass shall be set in a bed of putty and secured by copper plated, steel, spring glazing clips furnished by the casement manufacturer. Face putty shall be applied in a neat, clean-cut, smooth manner.

(Note:—Do not paint until putty has thoroughly hardened.)

SCREENS

(Note:—We do not supply screens for casement doors.)

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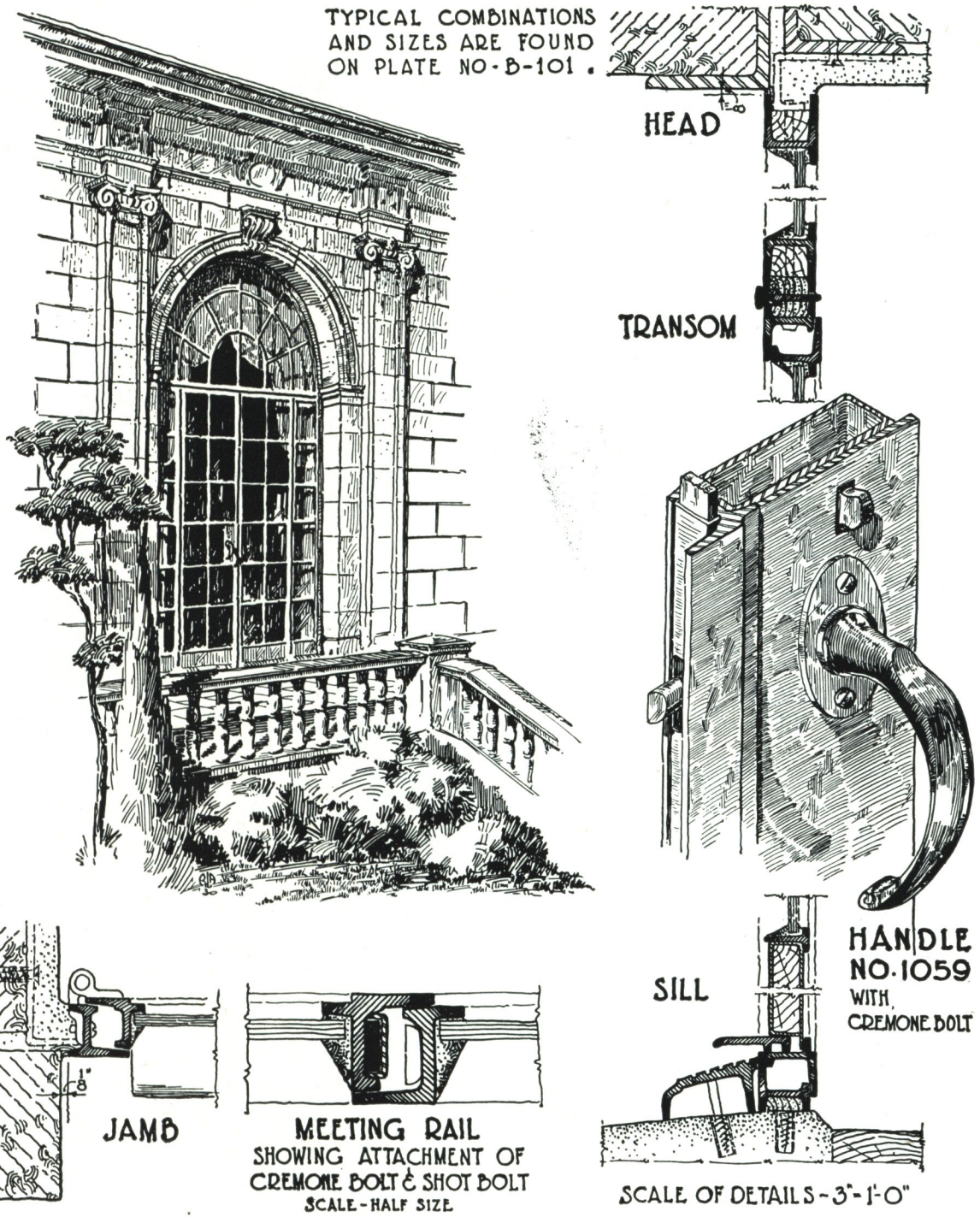
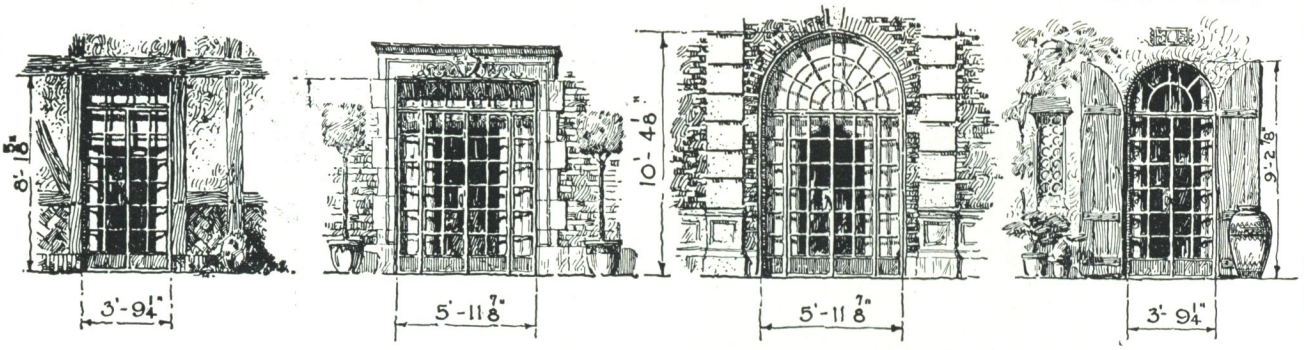


Fenestra 1930

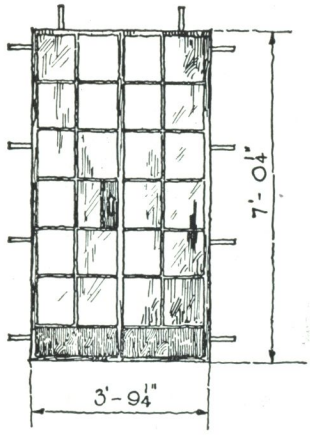
FENESTRA CASEMENT DOORS
OPEN IN WITH FENCRAFT CASEMENTS

Plate No. B 201

Continued on next page



TYPICAL COMBINATIONS AND SIZES



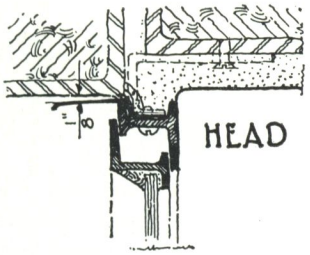
OUTSIDE ELEVATION OF DOOR UNIT

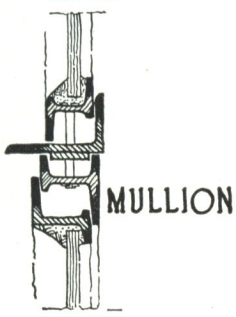
NOTES

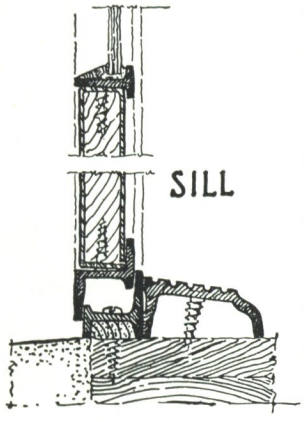
ELEVATIONS SHOWN OF TYPICAL COMBINATIONS AND DOOR UNIT WITH ANCHOR CLIPS ATTACHED APPLY TO BOTH OPEN IN AND OPEN OUT DOORS

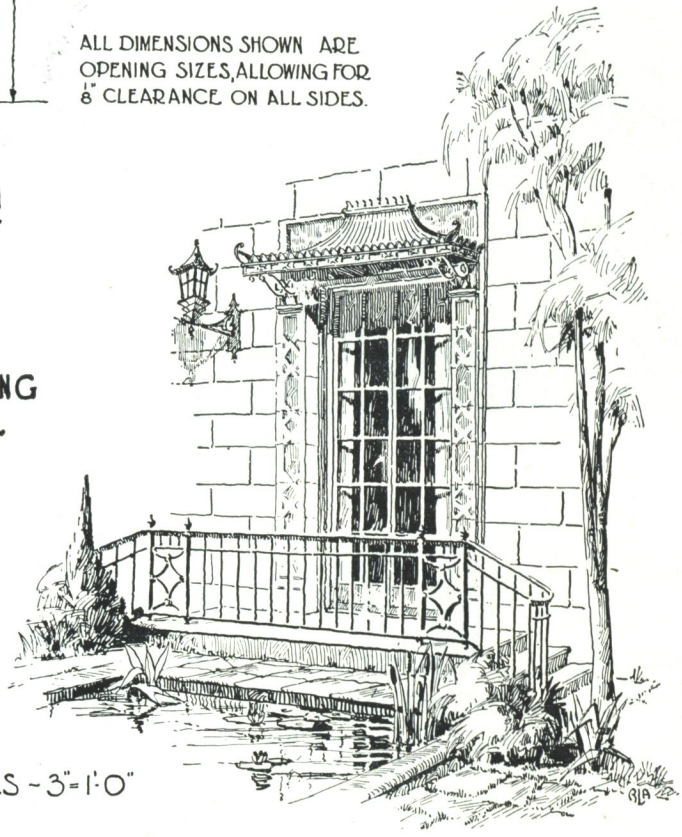
HEAVY ANCHOR CLIPS OF 1" x 3/16" FLAT STEEL ARE SUPPLIED FOR ANCHORING DOOR WHEN INSTALLED INTO MASONRY OPENINGS

ALL DIMENSIONS SHOWN ARE OPENING SIZES, ALLOWING FOR 1/8" CLEARANCE ON ALL SIDES.









SCALE OF DETAILS - 3"=1'-0"

Fenestra 1930

FENESTRA CASEMENT DOORS
OPEN OUT WITH FENWROUGHT CASEMENTS

Plate No B-101

Continued on next page

SCREENED FENWROUGHT CASEMENTS

A series of solid section steel casement windows with swing leaves opening out. Designed to give the attractiveness and convenience demanded in all modern homes and apartments. Accommodate Fenestra flat bronze screens so arranged that the swing leaves may be opened, closed and locked through the screens, but without touching them

SPECIFICATIONS

For nomenclature of individual types refer to standard drawings or price sheets obtainable from local Fenestra representatives.

Notes are explanatory or advisory and need not be included in the specifications.

GENERAL

Steel casement windows shall be Fenestra Screened Fenwrought as manufactured by the Detroit Steel Products Company.

MATERIAL

CASEMENT SECTIONS—All sections shall be specially designed, hot rolled, solid steel casement bars with heavy fillets in all re-entrant angles.

FRAME MEMBERS and the stiles and rails of each swing leaf shall be rolled with a 1/8" baffle.

MUNTINS shall be T bars.

MULLIONS—All Mullions shall be hot rolled, solid steel T bars.

(Note:—Use when two or more casements are placed side by side or one above another in the same opening. Pressed metal or built-up sections shall not be used for either vertical or horizontal mullions.)

SCREENS—Material for screens and screen frames shall be as shown in screen specifications.

CONSTRUCTION

FRAMES AND SWING LEAVES shall be of baffled Z bars mitered at all corners and electrically butt welded. All exposed faces at welds shall be ground to a smooth finish. Provide continuous, two-point, flat contact weathering between swing leaves and frame.

MUNTINS shall be continuous from head to sill and from jamb to jamb, so interlocked as to increase the rigidity and strength at intersections. Joints at frames, stiles and rails shall be mortise and tenon, air hammer riveted.

(Note:—Muntins may be omitted to permit glazing in single lights of plate glass or leaded glass. If desired, so specify. We do not supply leaded glass. In four light high swing leaves, we recommend the use of one horizontal muntin in the center.)

MULLIONS shall be 1 3/8" deep. Provide bolts for frame attachment.

TRANSOM BARS shall not be less than 2 1/4" deep with tip of protruding web bent downward to form a drip. They shall be continuous from jamb to jamb. Provide bolts for frame attachment.

COPPER HEAD DRIP—Wherever swing leaves extend to head of frame, provide a continuous, heavy, electro-galvanized steel drip.

(Note:—Drip is shipped unattached.)

SILL AND JAMB ANCHOR CLIPS—Furnish steel (sill) (jamb) anchor clips with bolts to attach to frame as required.

ATTACHED HARDWARE

(Note:—Attached at factory.)

SIDE HINGES—All side hung swing leaves shall be hung on two heavy extension (cleaning) hinges of special solid rolled steel with heavy re-entrant angle fillets. Hinge pins (non-removable) shall be of solid bronze accurately fitted into flanged bronze bushings.

(Note:—Bronze pins and bushings provide 100% bronze bearing at all moving pivot points.)

SWING LEAF KEEPER shall be cut from a solid rolled steel section welded to the swing leaf stile.

LOCKING HANDLE BRACKET—Ornamental locking handle bracket shall be heavy gauge steel plate, stamped to special design and solidly attached to the frame section.

(Note:—On units with only one swing leaf, the bracket is welded to the frame section. (Specify left or right.) On units with two adjacent swing leaves, the bracket is screwed with four screws to the meeting rail.)

OPERATOR PROVISIONS—Provide means for the attachment of Fenestra standard through screen operator. Provide tapped holes in bottom rails of all swing leaves for operator attachment.

Continued on next page

SCREEN PROVISIONS—Provide one or more pairs of tapped holes in the top rail of the frame for the attachment of screen retaining clips.

DETACHED HARDWARE

All detached hardware shall be shipped carefully packed to prevent damage until applied for use.

LOCKING HANDLES (for side hung swing leaves)—Ornamental locking handles shall be of malleable iron with dull black, rust-resisting finish and shall be designed with a hinge action, to permit slipping through circular hole in screen escutcheon when screen is placed or removed. Handles to be rigidly attached to a stud and beveled cam. Handle No. 1023.

(Note:—At extra cost special finishes may be secured: "Scaley," "Coarse Sand," "Hammered" or "Polished" either in bronze or nickel silver, or chromium plated in bronze only.)

OPERATOR—All operators shall be Fenestra special thumbscrew type, designed to provide easy operating movement through the screen. No. 1033.

Operator shall consist of a die cast arm passing through a die cast fulcrum guide equipped with a bronze friction plate. One end of the arm to attach to the sill of the swing leaf by a pressed steel bracket; the other end to carry a solid steel peg for a finger grip. Operating mechanism to be mortised into the frame bracket and held by machine screws.

(Note:—Special operator finishes corresponding to special handle finishes may be had at extra cost.)

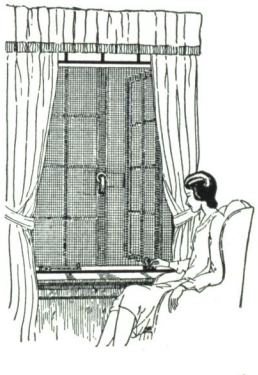
OPEN OUT TRANSOM OPERATOR shall be iron and bronze peg and stay, No. 1125, designed to operate through the screen.

MASTIC

The casement manufacturer shall furnish mastic (one pound to ten lineal feet) to form a weather-tight frame bed, at head, jambs and sill (and mullions).

ERECTION

(Note:—We recommend that all casements be installed in prepared openings accurately constructed in accordance with the Standard Fenestra installation details. We do not recommend building casements directly into the masonry as the walls are laid up, as this frequently delays erection and is apt to result in springing or racking the casements out of shape.)



All casement windows shall be set plumb and true, properly aligned and securely anchored before glazing.

All mullions shall be rigidly bolted to frames.

Set all frames in mastic neatly applied in a narrow beading where they come in contact with the building construction (or steel mullions). Use one pound of mastic to ten lineal feet.

Apply all hardware in accordance with the manufacturer's directions.

(Note:—Give second coat of paint and glaze before applying finish hardware.)

PAINTING

All casement windows shall be given one dip coat of gray lead and oil paint by the manufacturer before shipment.

(Note:—The following should be provided for in the painting specifications: "One additional coat of paint should be applied after erection before glazing. Further painting should be deferred until at least three weeks after glazing to allow putty to set. One or more additional coats may then be applied as required.")

GLASS AND GLAZING

(Note:—The following should be included in the Glass and Glazing Specifications:

"Glass shall be: (⅛" light plate) (¼" thick plate) (double strength for small lights only.) Single strength glass is not recommended."

"Putty shall be steel casement putty." This is a special high grade putty which insures quick setting. Ordinary wood window putty must not be used. If leaded glass is desired, so specify.")

All casement windows shall be glazed from the outside. All glass shall be set in a bed of putty and secured by copper plated steel spring glazing clips furnished by the casement manufacturer. Face putty shall be applied in a neat, clean-cut, smooth manner.

(Note:—Do not paint until putty has thoroughly hardened.)

FLAT SCREENS

Screens shall be designed to set flat against the inside of the casement frame with handle and operating hardware extending through the screen to permit operation of the swing leaf without touching the screen.

Screen frames shall be of best quality strip steel, formed 1" wide by ½" thick at head and jambs. All frames shall contain a triangular reinforcing brace running the full length of the stile. Paint to be two coats of gray lead and oil, baked on. Screen cloth shall be standard woven 16-mesh of antique finish bronze wire, held taut along both stiles and rails by a specially formed cap interlocked with the main portion of the frame, but quickly removable for rewiring. Each screen shall be provided with a 22-gauge steel escutcheon with circular hole to fit over and around the locking handle. Bottom rail of each screen shall be designed with a slot, to permit the passage of the operator arm.

(Note:—Screens with bronze frames or with finer mesh may be had at extra cost.)

SHADE AND DRAPERY BRACKETS

(Note:—Each casement is drilled at both jambs near the head, for attaching standard shade and drapery brackets which can be purchased from local interior decorators.)

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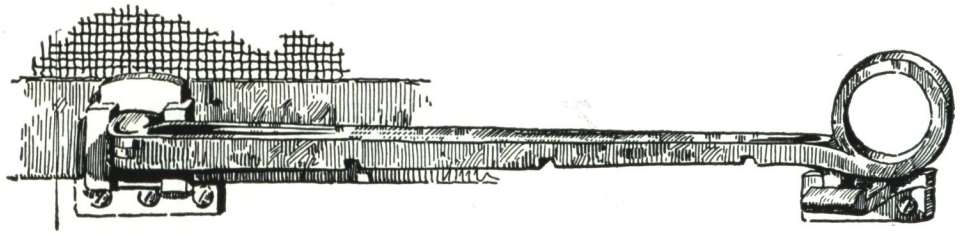
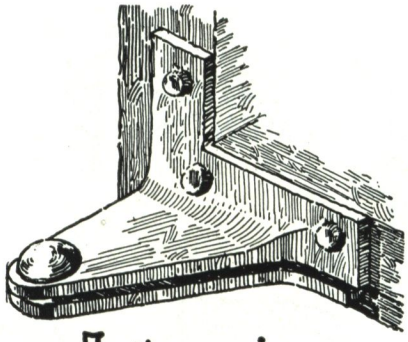


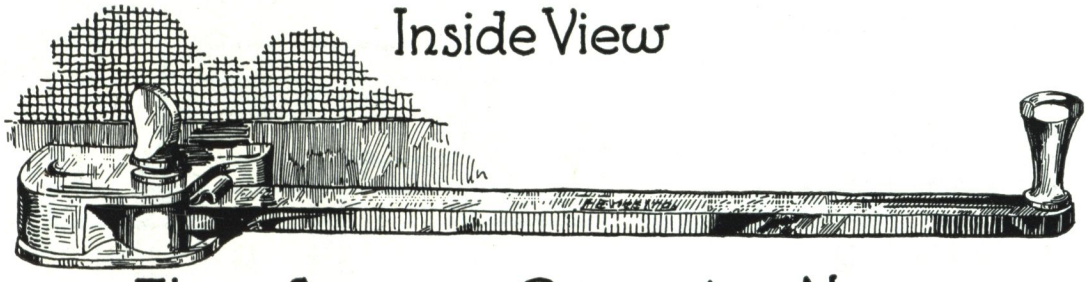
Transom Stay No. 1125



Extension Hinge

Handle No. 1023

Inside View



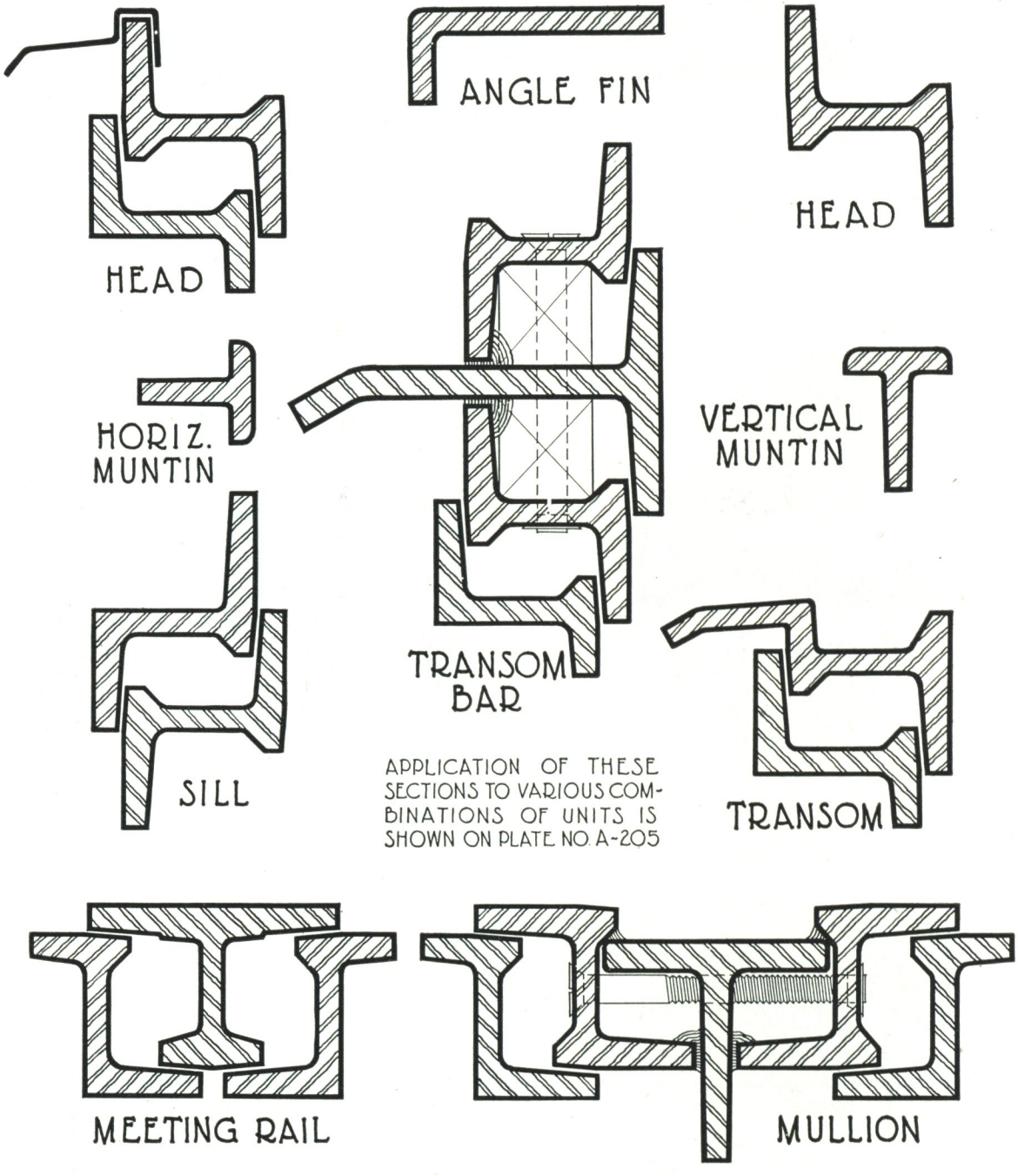
Thru-Screen Operator No. 1033

Fenestra 1930

SCREENED FENWROUGHT HARDWARE

Plate No A-201

Continued on next page



Fenestra 1930

SCREENED FENWROUGHT
FULL SIZE SECTIONS

Plate No A-202

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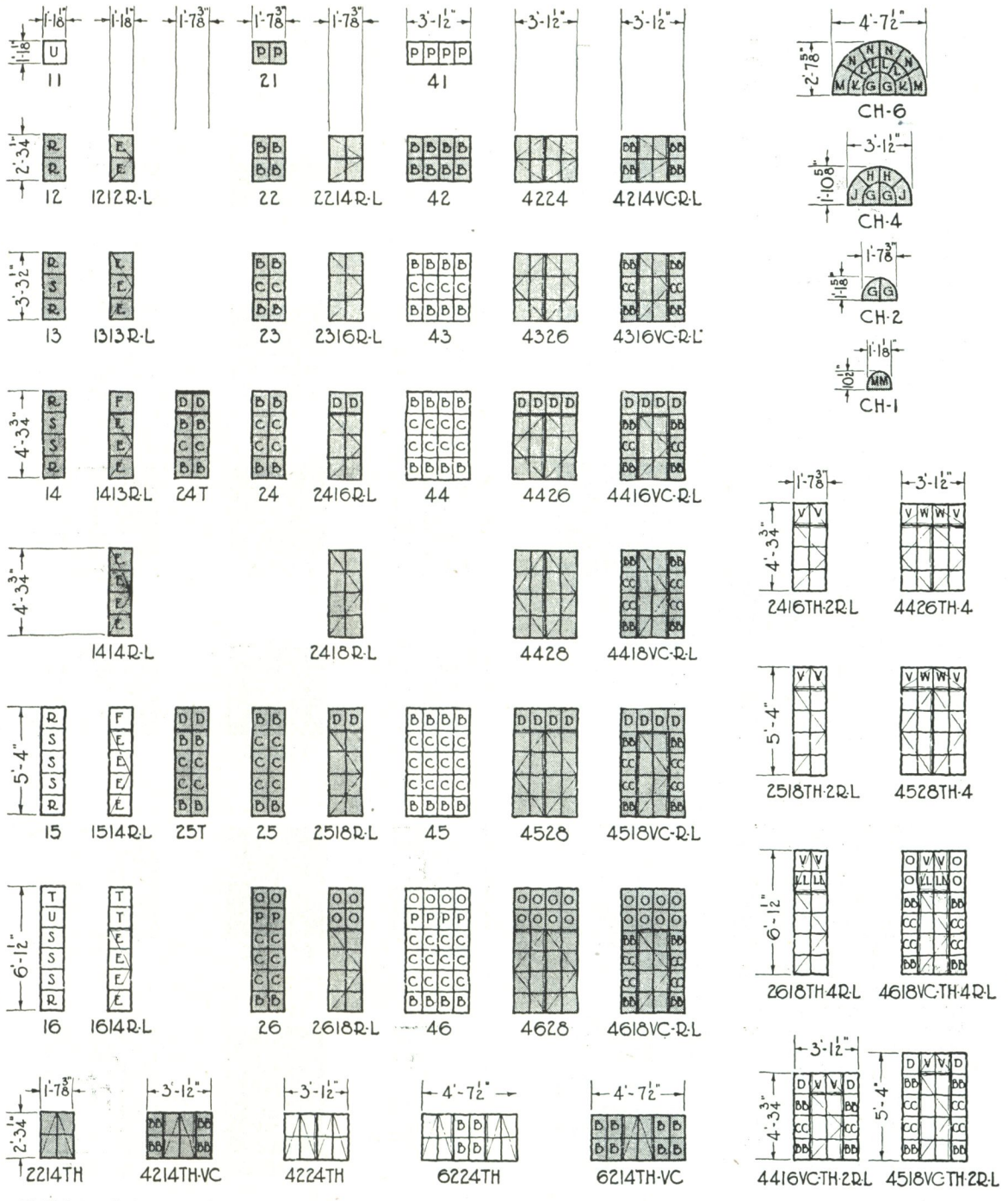


TYPES SHOWN SHADED ARE CARRIED IN STOCK – OTHER TYPES ARE STANDARD

Fenestra 1930

SCREENED FENWROUGHT TYPES AND SIZES

Plate No A-203

Continued on next page

GLASS SIZES

		CUT FROM
A	8" x 12"	STOCKED
B	8 1/16" x 12 5/8"	STOCKED
C	8 1/16" x 12"	STOCKED
D	8 1/16" x 11 3/4"	STOCKED
E	10" x 12"	R
F	11 3/16" x 11 3/4"	R
G	TEMPLATE	C
H	TEMPLATE	M
J	TEMPLATE	M
K	TEMPLATE	R
L	TEMPLATE	D
M	11 1/4" x 16 1/2"	STOCKED
N	TEMPLATE	M
O	8 1/16" x 10 1/2"	D
P	8 1/16" x 11 3/16"	D
R	11 3/16" x 12 5/8"	STOCKED
S	11 3/16" x 12"	R
T	11 3/16" x 10 1/2"	R
U	11 3/16" x 11 3/16"	R
V	8" x 10"	A
W	8 1/16" x 10"	D
BB	8 5/8" x 12 5/8"	STOCKED
CC	8 5/8" x 12"	STOCKED
LL	8" x 9 1/8"	A
MM	TEMPLATE	D

LIGHTS IN VENTILATORS (NOT LETTERED) ARE "A" SIZE 8"x12" GLASS.

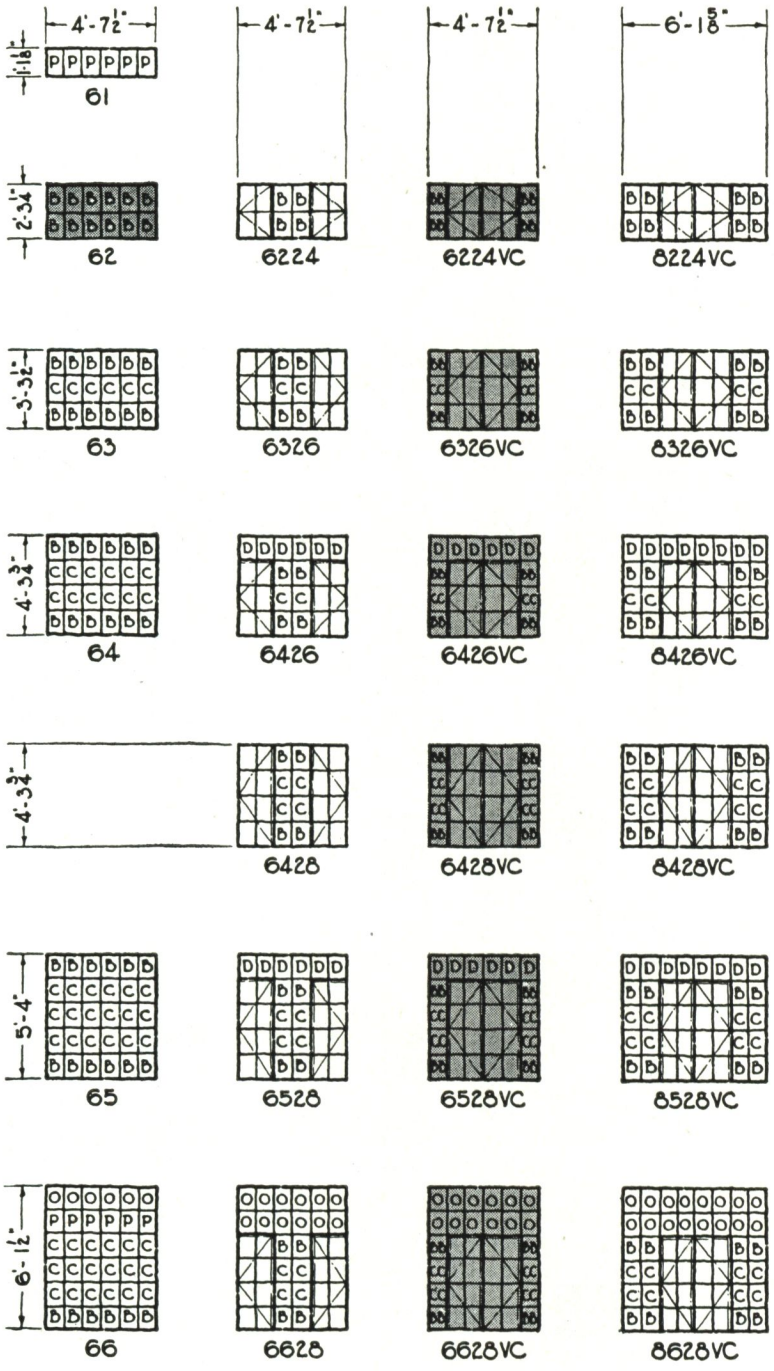
NOTES

VC - VENTILATOR IN CENTER
TH - TOP HINGED TRANSOM

SIZES GIVEN ARE WINDOW DIMENSIONS. 1/8" SHOULD BE ALLOWED FOR CLEARANCE ON ALL SIDES

HANDING OF CASEMENTS IS DETERMINED BY LOCATION OF HINGE VIEWED FROM OUTSIDE. RIGHT HAND CASEMENTS ARE HINGED AT RIGHT AND LEFT HAND CASEMENTS ARE HINGED AT LEFT.

TYPES SHOWN SHADED ARE CARRIED IN STOCK. OTHER TYPES ARE STANDARD.



Fenestra 1930

SCREENED FENWROUGHT TYPES AND SIZES

Plate No A-204

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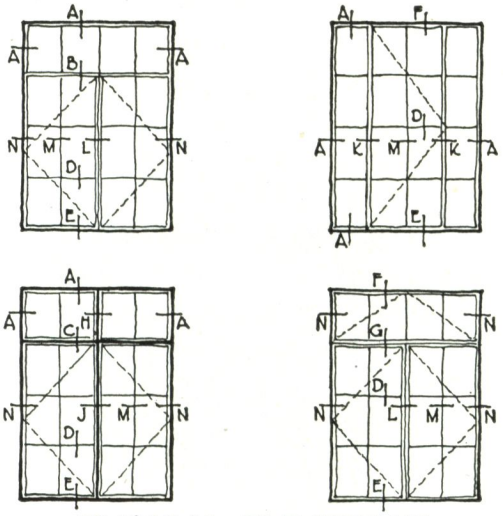
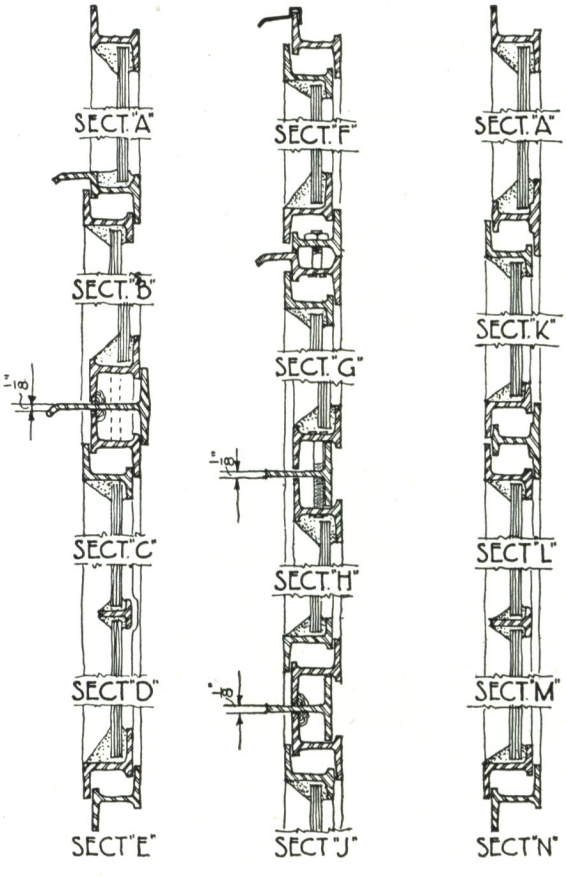


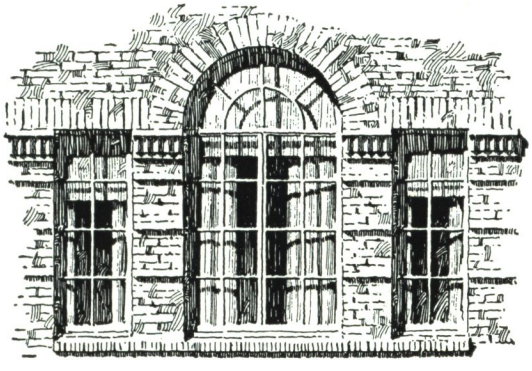
TYPICAL ELEVATIONS

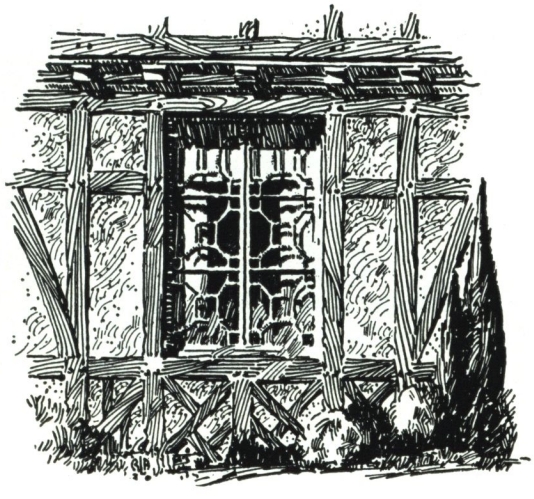
SYMMETRICAL COMBINED WIDTHS

WHERE TWO OR MORE FENWROUGHT CASEMENTS ARE COMBINED IN THE SAME OPENING 1/8" MUST BE ADDED FOR EACH MULLION OR TRANSOM-BAR USED

STANDARD WIDTHS	UNITS WIDE	PANES WIDE	PANES WIDE PER UNIT	VERT. MULL.
1'-7 3/8"	1	2	2	0
3'-1 1/2"	1	4	4	0
3'-2 1/8"	2	4	2,2	1
4'-7 1/2"	1	6	6	0
4'-10 3/8	3	6	2,2,2	2
6'-1 5/8"	1	8	8	0
6'-3 1/8"	2	8	4,4	1
6'-4 1/2"	3	8	2,4,2	2
6'-5 7/8"	4	8	2,2,2,2	3
7'-10 1/2"	3	10	2,6,2	2
7'-10 5/8"	3	10	4,2,4	2
8'-1 3/8"	5	10	2,2,2,2,2	4





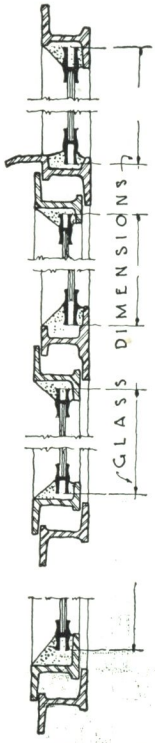


Fenestra 1930

SCREENED FENWROUGHT COMBINATION DETAILS

Plate No A-205

Continued on next page

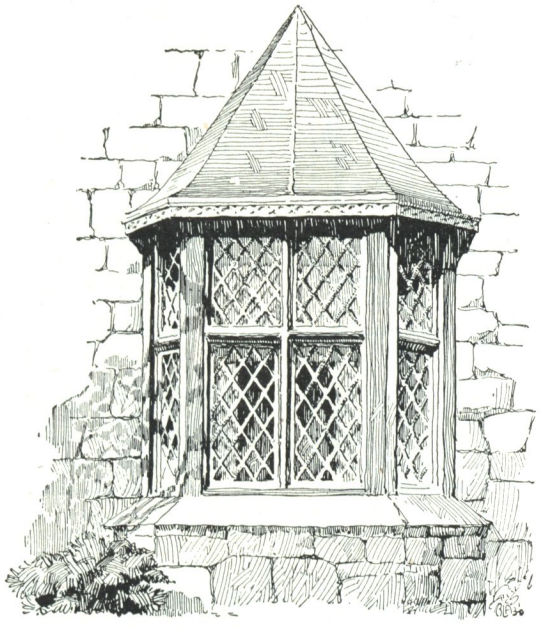


NOTES

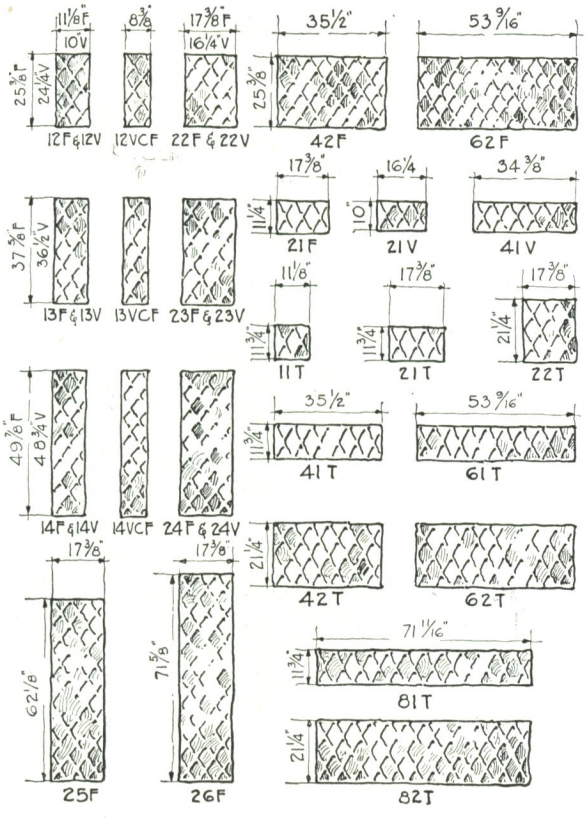
LEADED GLASS IS NOT FURNISHED BY DETROIT STEEL PRODUCTS CO. PANELS SHOWN ARE SUGGESTIONS FOR PURCHASE LOCALLY TO FIT STOCK FENWROUGHT TYPES WITHOUT MUNTINS. — PATTERN AND ALIGNMENT OF CAMES TO COINCIDE WITH THOSE OF ADJOINING UNITS DIAMOND OR RECTANGULAR LEADED PANELS OR PLATE GLASS OF SIZES SHOWN WILL FIT WITH 1/8" CLEARANCE DETAILS AT LEFT SHOWS LEADED CAMES USED WITH VARIOUS SASH SECTIONS

EXPLANATION OF NOMENCLATURE

F- PANEL FOR FIXED UNIT
V- PANEL FOR VENTILATOR UNIT
T- PANEL FOR FIXED TRANSOMS
VCF- PANEL FOR FIXED SIDE-LIGHTS



DANIEL LIPSKY RESIDENCE
GREAT NECK LONG ISLAND N.Y.
A·W·COOTE ARCHITECT

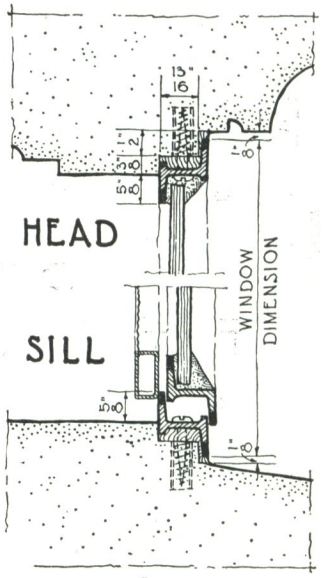


Fenestra 1930

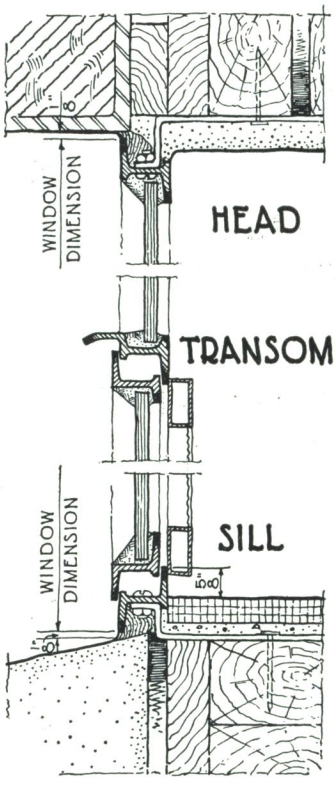
SCREENED FENWROUGHT SUGGESTIONS FOR LEADED GLASS

Plate No A-206

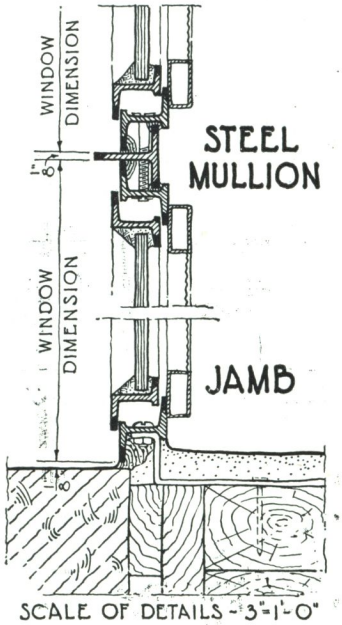
Continued on next page



SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK.



L.A. LAYNE RESIDENCE - RIVER OAKS COUNTRY CLUB
C.W. OLIVER - ARCHITECT HOUSTON, TEXAS



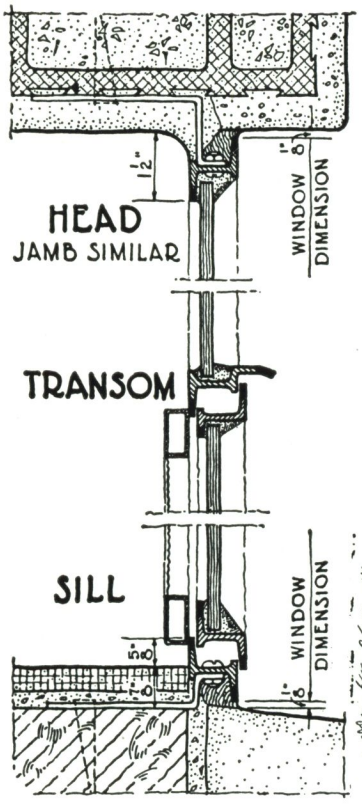
SCALE OF DETAILS - 3"-1'-0"

Fenestra 1930

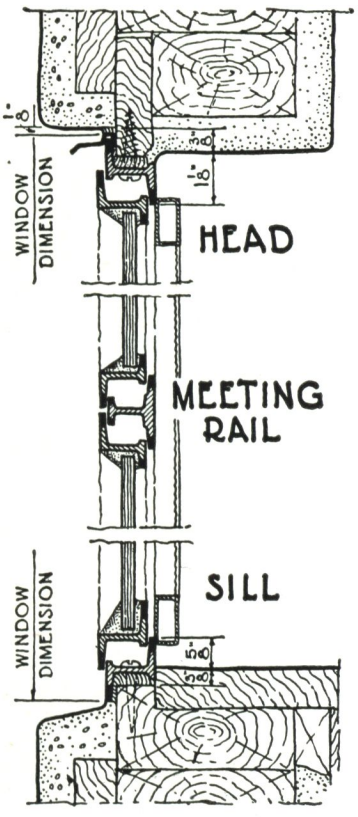
SCREENED FENWROUGHT BRICK VENEER & STONE INSTALLATIONS

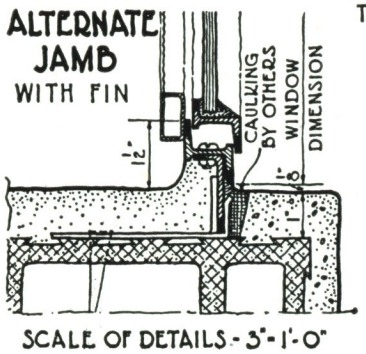
Plate No A-207

Continued on next page



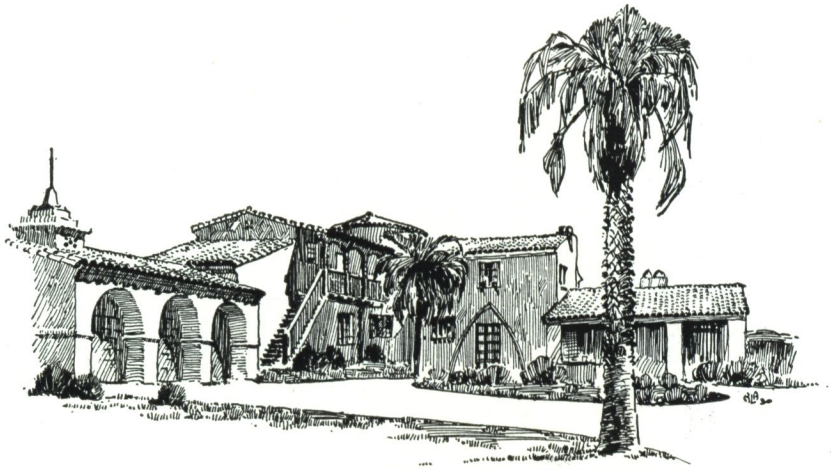
HENRY BARKHAUSEN RES.-WEST PALM BEACH, FLA.
TREANOR AND FATIO - - ARCHITECTS.





SCALE OF DETAILS - 3"-1'-0"

SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK.



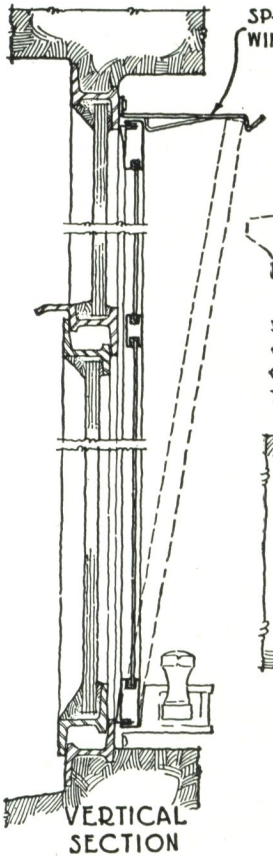
HALLAM COOLEY RES.- LOS ANGELES, CALIF.
JONES AND WARD - - ARCHITECTS.

Fenestra 1930

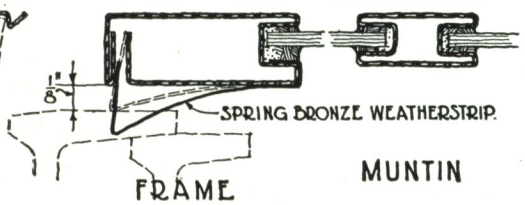
SCREENED FENWROUGHT STUCCO ON HOLLOW TILE & FRAME

Plate No A-208

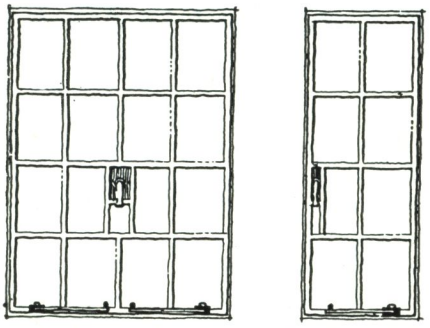
Continued on next page



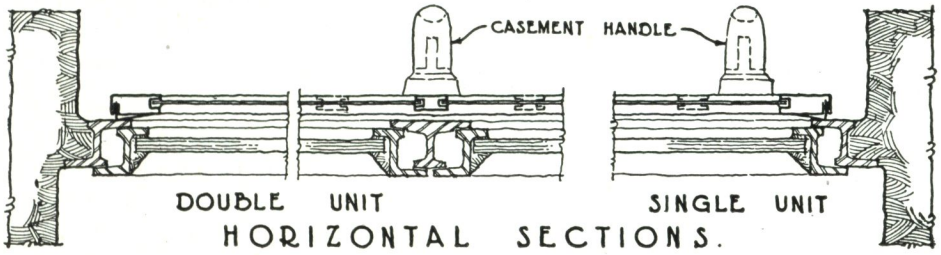
FULL SIZE SECTIONS.



DOTTED LINES SHOW FRAME IN PLACE ON CASEMENT WITH WEATHERSTRIP COMPRESSED MAKING A WEATHER-TIGHT CONTACT WITH CASEMENT



DOUBLE UNIT SINGLE UNIT
TYPICAL INSIDE ELEVATIONS



HORIZONTAL SECTIONS.

CONSTRUCTION

THE WINTER WINDOW IN ALL CASES COVERS THE ENTIRE CASEMENT UNIT WHETHER FIXED TYPE OR VENTED WITH FIXED SIDELIGHTS OR TRANSOMS.

FRAME IS A $\frac{3}{8}$" x 1" SPECIAL ROLLED SECTION OF #25 GA. ZINC.

WEATHER STRIP ROLLED FROM #31 GA. SPRING BRONZE. IT IS ATTACHED AS AN INTEGRAL PART OF FRAME, AND PROVIDES CONTINUOUS WEATHER-TIGHT CONTACT WITH CASEMENT.

MUNTINS ARE ROLLED FROM #25 GA. ZINC

ALL JOINTS ARE SOLDERED

WINDOW IS FINISHED IN OXIDIZED BRONZE, AND IS GLAZED WITH SINGLE STRENGTH GLASS CAULKED IN PLACE BY MANUFACTURER

CLIPS ARE OF #20 GA. SPRING STEEL.

ATTACHMENT OF WINTER WINDOW

THE THREE SIMPLE OPERATIONS SHOWN BELOW ARE ALL THAT ARE REQUIRED IN INSTALLING WINDOW

CLIPS

CLIPS ARE PROVIDED AT HEAD TO HOLD WINDOW IN PLACE & ALLOW A LIMITED OPENING FOR VENTILATION IF DESIRED.

WHEN VENTS COME TO THE HEAD OF UNIT THE PUNCHING FOR SCREEN CLIPS IS USED FOR ATTACHING ABOVE CLIPS. FOR FIXED UNITS, AND THOSE WITH FIXED TRANSOMS. HOLES MUST BE DRILLED & TAPPED IN FIELD FOR THESE CLIPS. IN CASE SHADE BRACKETS ARE NOT USED, THIS FIELD WORK CAN BE ELIMINATED BY USING THE PUNCHING FOR SHADE BRACKETS

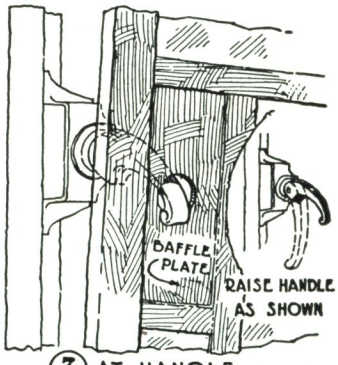
ON FIXED UNITS HOLES MUST BE PROVIDED IN SILL BAR IN FIELD FOR A SUPPORTING CLIP ON VENTILATED UNITS. OPERATOR & SUPPORTING CLIPS HOLD WINTER WINDOW AT SILL.

ATTACHING WINDOW

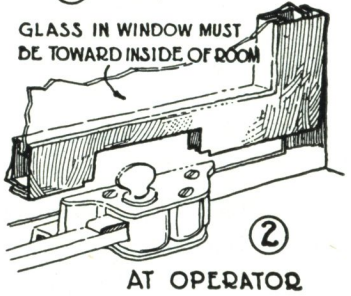
1-ATTACH CLIPS PER NOTE ABOVE

2-WITH VENTILATOR & STAY CLOSED SET WINDOW BACK OF OPERATOR HOUSING WITH NOTCH OVER STAY BR'KT.

3-ADJUST WINDOW SO HOLE IN BAFFLE PLATE SLIPS OVER LIFTED CASEMENT HANDLE. PUSH INTO PLACE



③ AT HANDLE



② AT OPERATOR

Fenestra 1930

FENWROUGHT WINTER WINDOWS
PATENTS APPLIED FOR

Plate No A-209

Continued on next page

"FENWROUGHT" CASEMENTS

Solid section steel casements similar to Screened Fenwrought, but without Fenestra flat screens. Fenestra Chamberlin Roll Screens or any other accepted method of screening may be used. For full sized sections and installation details see Screened Fenwrought Casements.

SPECIFICATIONS

For nomenclature of individual types refer to standard drawings or price sheets obtainable from local Fenestra representatives.

Notes are explanatory and need not be included in specifications.

GENERAL

Casements shall be Fenestra Fenwrought as manufactured by the Detroit Steel Products Company.

MATERIAL

(Note:—Same as the Material Specifications for Screened Fenwrought Casements except that Fenestra Screens are not provided.)

CONSTRUCTION

(Note:—Same as the Construction Specifications for Screened Fenwrought Casements, except that frame bars at swing leaf jambs are prepared for attachment of Fenestra Chamberlin Roll Screens.)

ATTACHED HARDWARE

(Note:—Attach at the factory.)

SIDE HINGES:

(Note:—Same as Side Hinge Specifications for Screened Fenwrought Casements.)

TOP HINGES—Top hung swing leaves in transoms shall be hung on heavy steel hinges with bronze pins.

LOCKING HANDLE BRACKETS — Ornamental locking handle brackets shall be cut from special, solid rolled steel sections welded to the swing leaf stiles.

OPERATOR PROVISIONS—Provide three countersunk holes standardized as to size and location in the bottom rail of the casement frame for the attachment of operator. Provide tapped holes in the bottom rails of all swing leaves for operator attachment.

(Note:—Provide only when optional operator is used.)

STRIKES—All handles shall lock against bronze strikes attached to the frames.

DETACHED HARDWARE

All detached hardware shall be shipped carefully packed to prevent damage until applied for use.

LOCKING HANDLES shall be of ornamental design, built to produce a cam action and shall be: (1) Standard, No. 198 malleable iron with dull black, rust-resisting finish. (2) Optional, No. 198 in oxidized bronze. (3) Optional, No. 699 (bronze only).

(Note:—Bronze at added cost over iron.)

Handles shall be attached to handle brackets by bronze hexagonal headed bolts, tap-screwed into steel, spring, friction clevises to insure constant and even tension and prevent rattle.

OPERATORS—For Side Hung Swing Leaves:

(1) STANDARD:

(Note:—Friction Hinges and no operator are standard.)

(2) OPTIONAL: Sliding Stay (malleable iron with dull black, rust-resisting finish) No. 612, or steel peg and stay with dull black, rust-resisting finish, stay plate and stay bracket) No. 208.

(3) OPTIONAL: Thumb Screw Stay (dull black, rust-resisting finish, bronze friction plate, guide and thumb screw) No. 203, or all bronze, No. 203-B.

(4) OPTIONAL: Gear Type Underscreen (malleable iron with black, rust-resisting finish or oxidized bronze) No. 385.

(Note:—Nos. 2, 3 and 4 at extra cost over standard and in bronze at slightly added cost over iron.)

For Top Hung Transom sash provide "Standard" Peg and Stay Operator, No. 747, iron with dull black, rust-resisting finish.

(Note:—In bronze, Part No. 1034, at added cost.)

MASTIC

(Note:—Same as the Mastic Specifications for Screened Fenwrought Casements.)

ERECTION

(Note:—Same as the Erection Specifications for Screened Fenwrought Casements.)

PAINTING

(Note:—Same as the Painting Specifications for Screened Fenwrought Casements.)

GLASS AND GLAZING

(Note:—Same as the Glass and Glazing Specifications for Screened Fenwrought Casements.)

SCREENING—SHADING

(Note:—Fenestra flat screens are not furnished, but Fenestra Chamberlin Roll Screen or any other accepted method of screening may be used. Shade and drapery brackets should be attached to the building construction.)

UNDERWRITERS

(Note:—Under certain conditions and limitations these windows can be supplied with Underwriters' Label.)

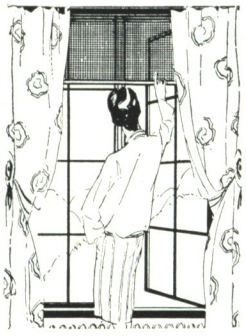
Continued on next page

FENESTRA CHAMBERLIN SCREENS

All screens shall be Fenestra Chamberlin Roll Screens. Provide regular weight, No. 32 gauge, 16-mesh bronze wire cloth with 5-strand reinforced, double selvage edges.

(Note:—Finer mesh supplied at extra cost.)

Provide a screen roller of not less than No. 20 gauge welded round steel tubing tinned for rust protection, mounted on a ¼" round, rolled steel axle by means of specially designed Doehler die cast non-ferrous alloy bearings.



Supply, attached to each roller, one best quality coil spring of No. 16 gauge steel wire tinned for rust protection and extending the full width of the roller.

Each roller to be housed in a No. 24 gauge electro-plated, cold rolled steel case with end caps so designed as to form a flush end surface.

Provide screen guides formed from not less than No. 24 gauge, electro-plated, cold rolled steel, for attachment to standard swing leaf jambs. All guides to be so designed that screen cloth feeds back into place without damage if accidentally pulled out. Face of each guide to be not less than 1" in width to provide a wide lap on the screen cloth. Each guide to have a vertical extension to permit adjustment. Provide a keeper at the lower end of each guide for engaging the automatic latch on the sill operating bar.

Provide, at the lower edge of the screen cloth, an operating bar not less than No. 24 gauge electro-plated, cold rolled steel, made in a two-piece interlocking construction and designed for the attachment of felt cushion strips.

Each end of each operating bar to be provided with a visible, positive, automatic catch for holding the screen in a closed position and tight against the window stool.

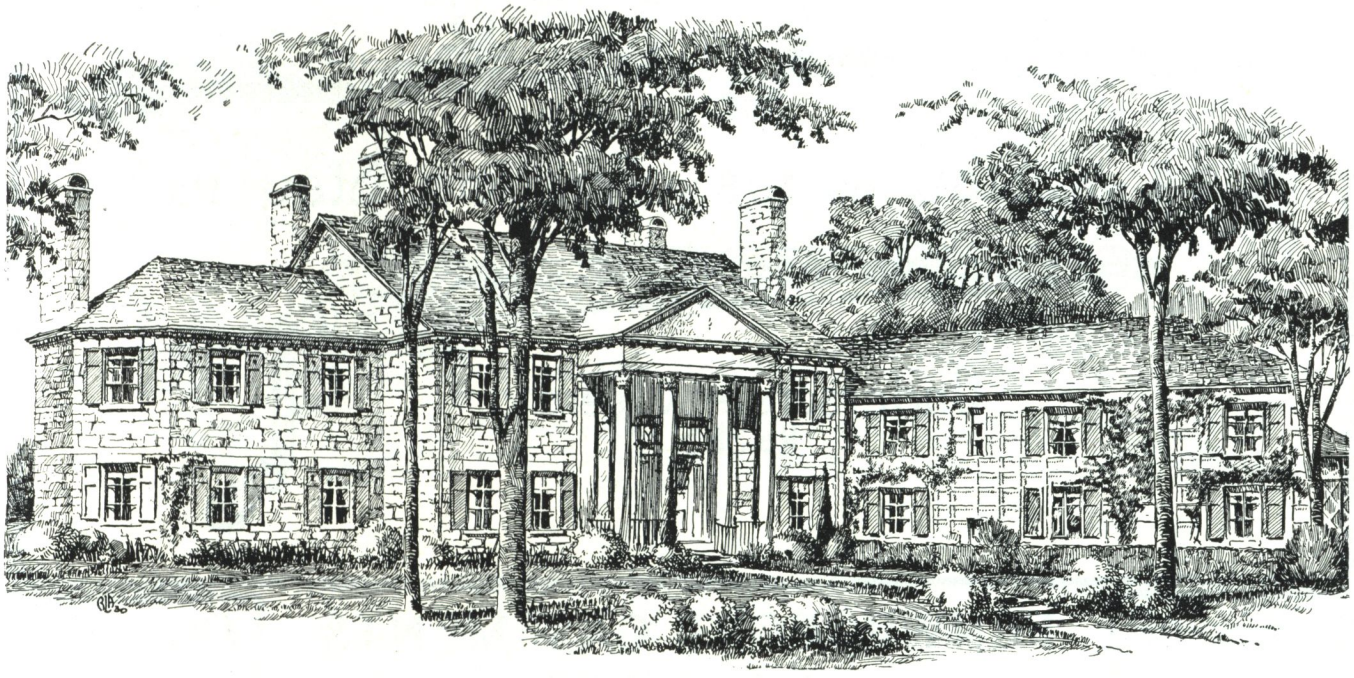
Each end of operating bar to be provided with a non-binding, spring-cushioned, sliding guide to permit easy operation of the screen.

Provide cushion strips of felt, properly attached to the operating bar to protect window stool and provide tight contact between screen and stool when screen is in a closed position.

Guides, roll case, operating bar and all exposed parts to be plated an oxidized copper color and lacquered. Screen wire to be antique bronze finish.

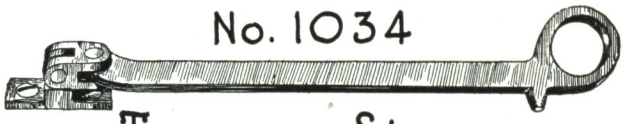
Provide bolts and nuts in sufficient quantity and proper sizes to attach screens in accordance with provisions made by the window manufacturer.

All screens to be so designed as to be rewirable when necessary.

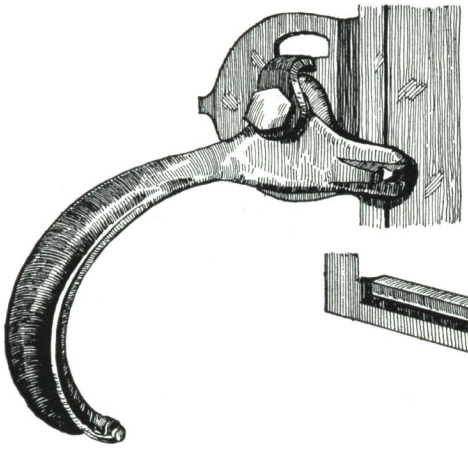


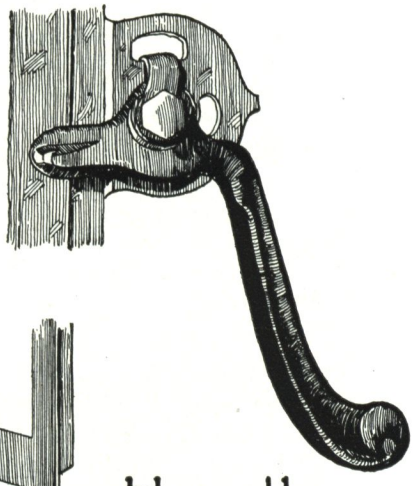
Fenwrought and Fencraft Casements in a Colonial House, Saddle River, N. J.
Aymar Embury II, Architect, New York City

Continued on next page

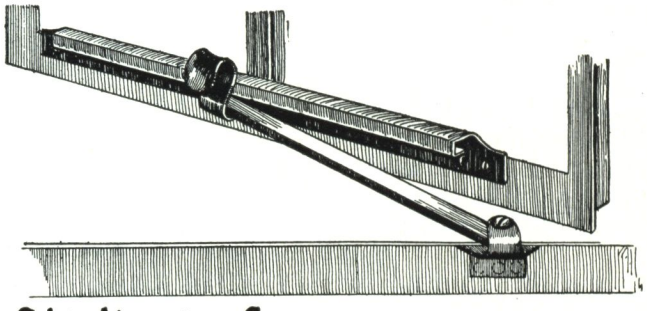


Transom Stays



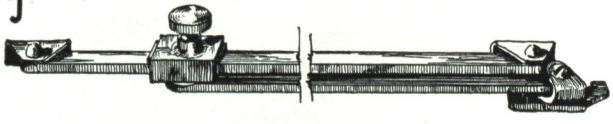


Handle
No. 699



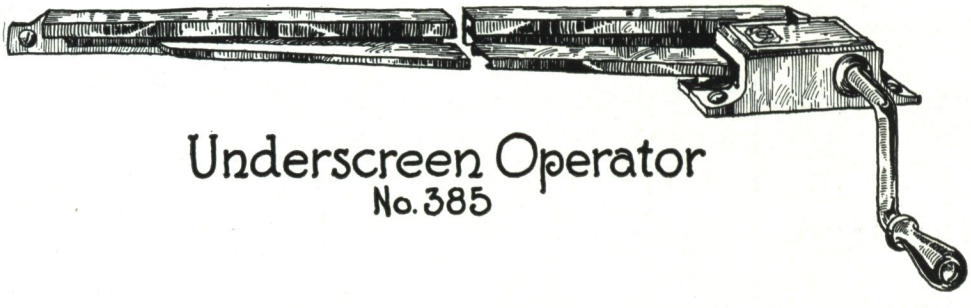
Handle
No. 198

Sliding Stay No. 612



Peg & Stay No. 208

Friction Stay No. 203



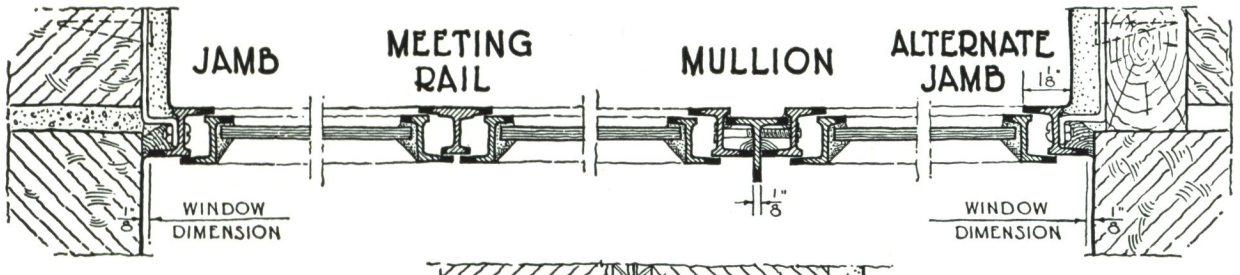
Underscreen Operator
No. 385

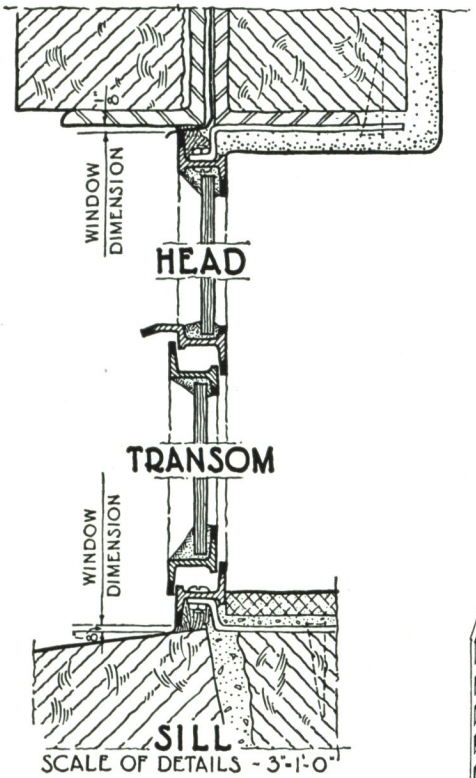
Fenestra 1930

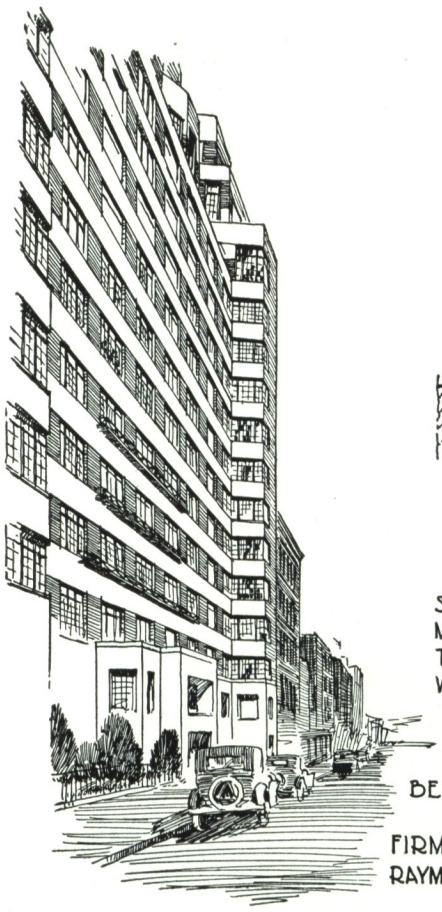
FENWROUGHT CASEMENTS HARDWARE.

Plate No A-101

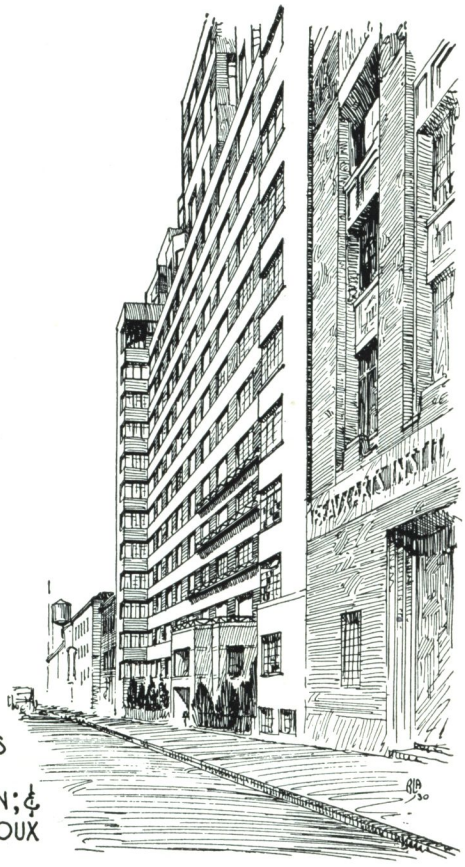
Continued on next page







SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK



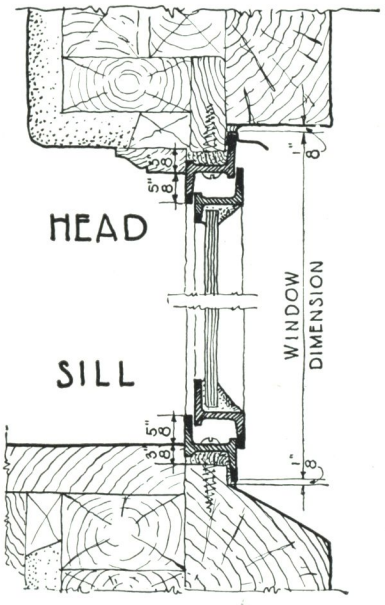
BEAUX-ARTS APARTMENTS
NEW YORK CITY
FIRM OF KENNETH M. MURCHISON; & RAYMOND HOOD, GODLEY & FOUILHOUX
ARCHITECTS

Fenestra 1930

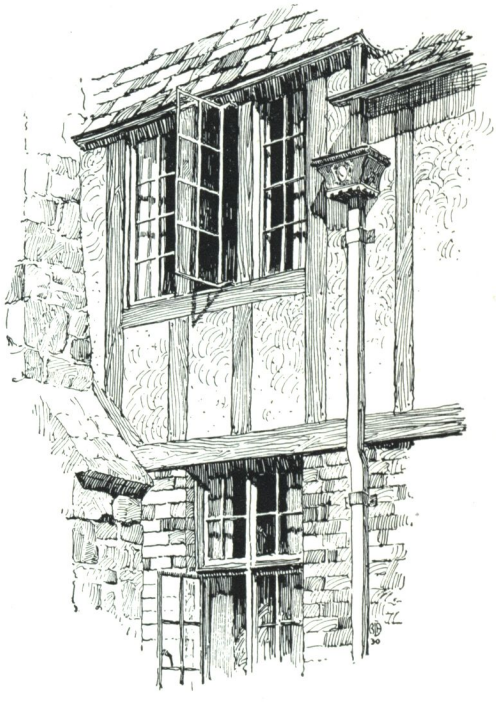
FENWROUGHT CASEMENTS
SOLID BRICK INSTALLATION

Plate No A-103

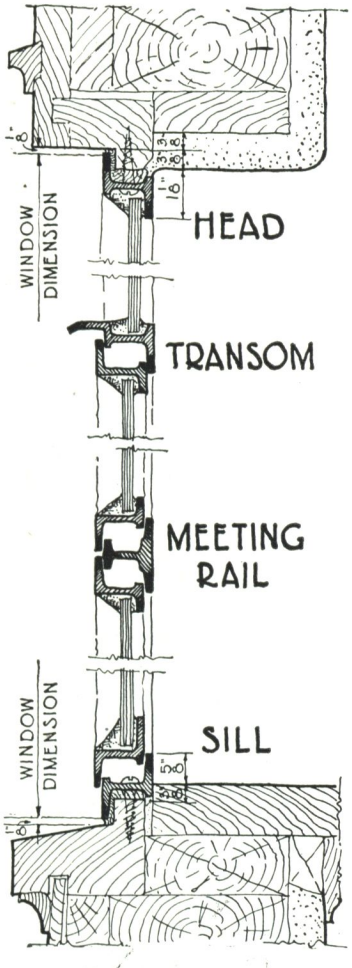
Continued on next page

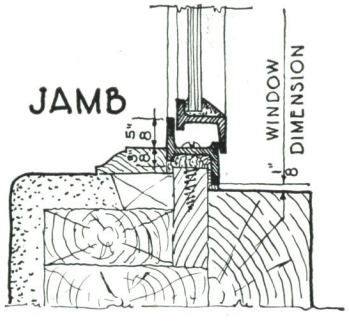


SCALE OF DETAILS -3"=1'-0"



CHAS. W. WALKER RES - HEMPSTEAD, L.I., N.Y.
GEORGE R. THOMPSON ~ ARCHITECT.

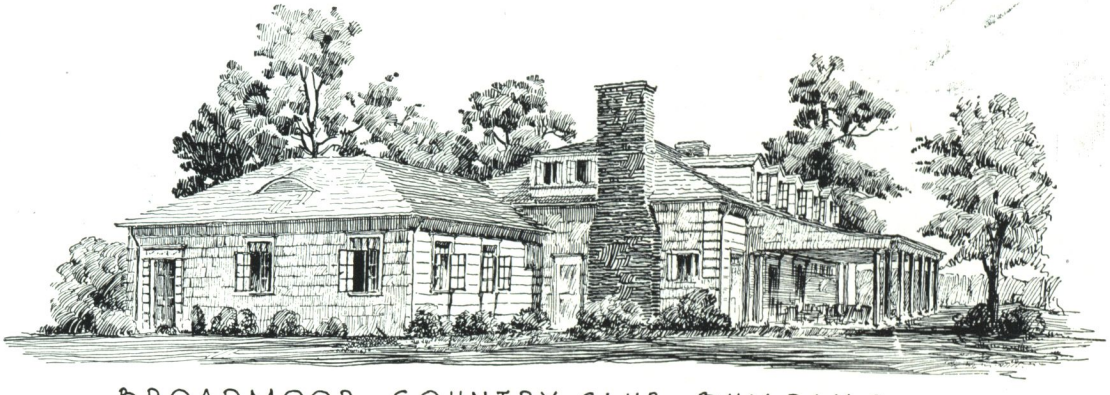




HALF TIMBER

NOTE
SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK

FRAME



BROADMOOR COUNTRY CLUB BUILDING
CLARENCE KING ARCHITECT SHREVEPORT LA.

Fenestra 1930

FENWROUGHT CASEMENTS
HALF TIMBER & FRAME INSTALLATION

Plate No A-102

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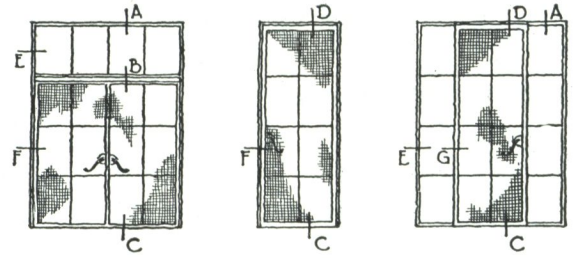
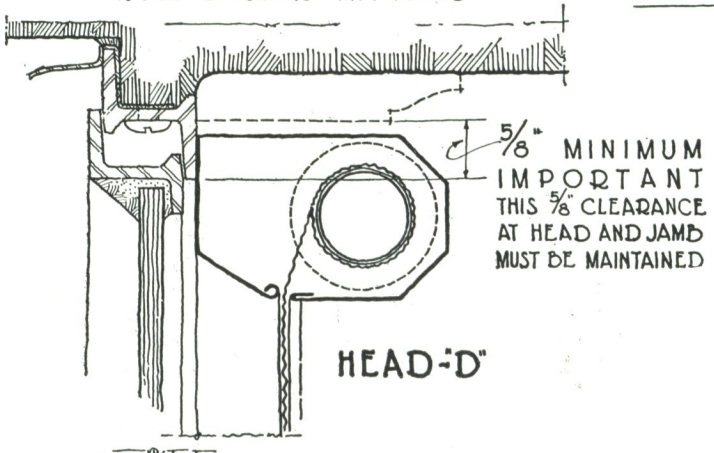
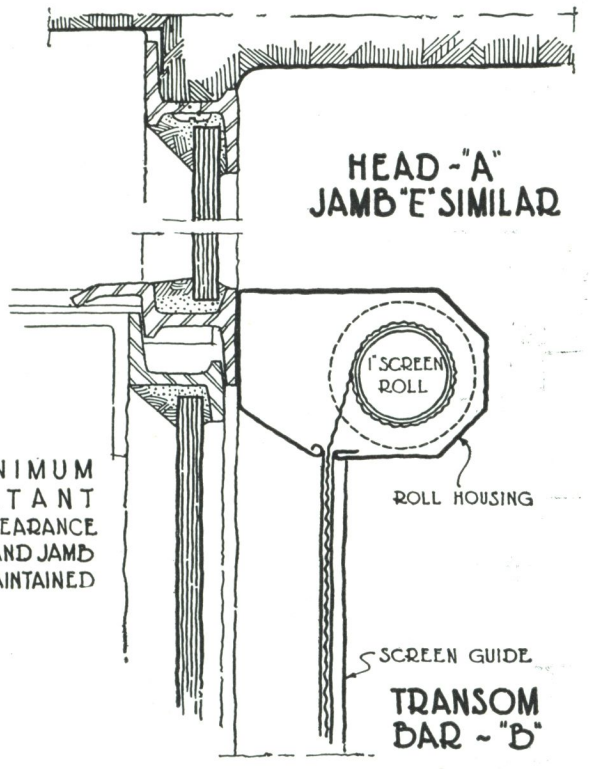
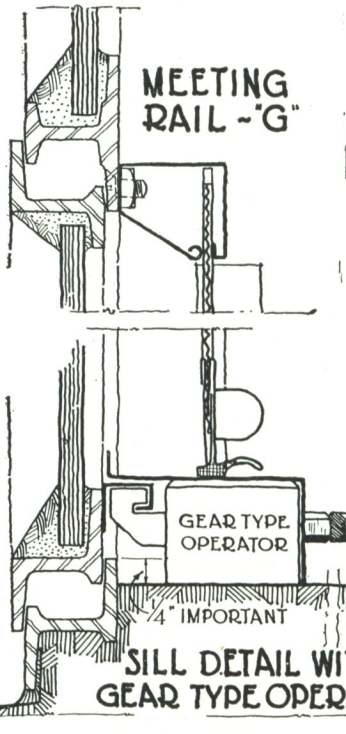


TYPICAL UNITS SHOWING ROLL-SCREENS ATTACHED

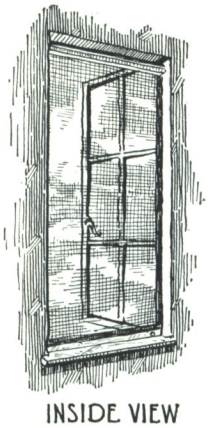


HEAD-"D"

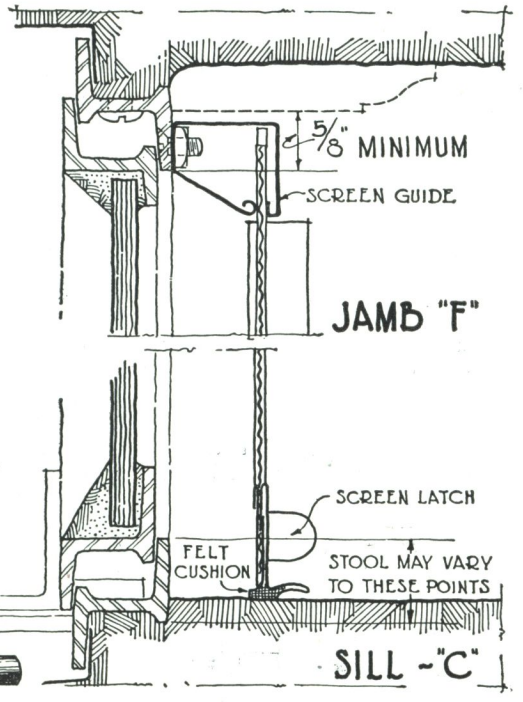




SILL DETAIL WITH GEAR TYPE OPERATOR



INSIDE VIEW



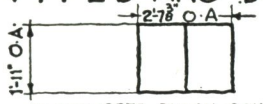
Fenestra 1930	FENESTRA CHAMBERLIN SCREEN CONSTRUCTION DETAILS	Plate No A-104

Continued on next page

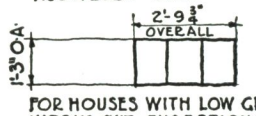
FENESTRA "BASEMENT" WINDOWS

Sold Exclusively Through Dealers

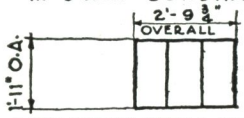
TYPES AND SIZES



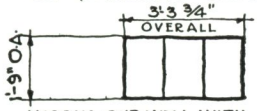
IN CONCRETE BLOCK CONSTRUTCTION FITS OPENING TWO BLOCKS WIDE BY THREE BLOCKS HIGH WITH A TROWELED SILL



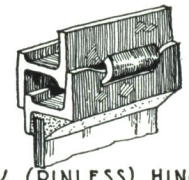
FOR HOUSES WITH LOW GRADE LINE WORKS OUT EXCEPTIONALLY WELL IN BRICK CONSTRUCTION



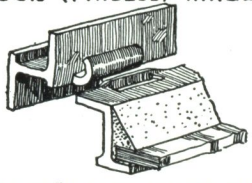
FOR HOUSES WITH A HIGHER GRADE-LINE WORKS OUT WELL IN BRICK OR CONCRETE BLOCKS



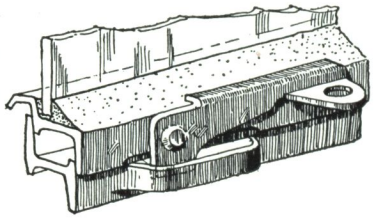
WORKS OUT WELL WITH EITHER BRICK OR CONCRETE BLOCK AND IS THE WINDOW MOST USED IN THE AVERAGE TYPE OF CONSTRUCTION



HOOK (PINLESS) HINGE

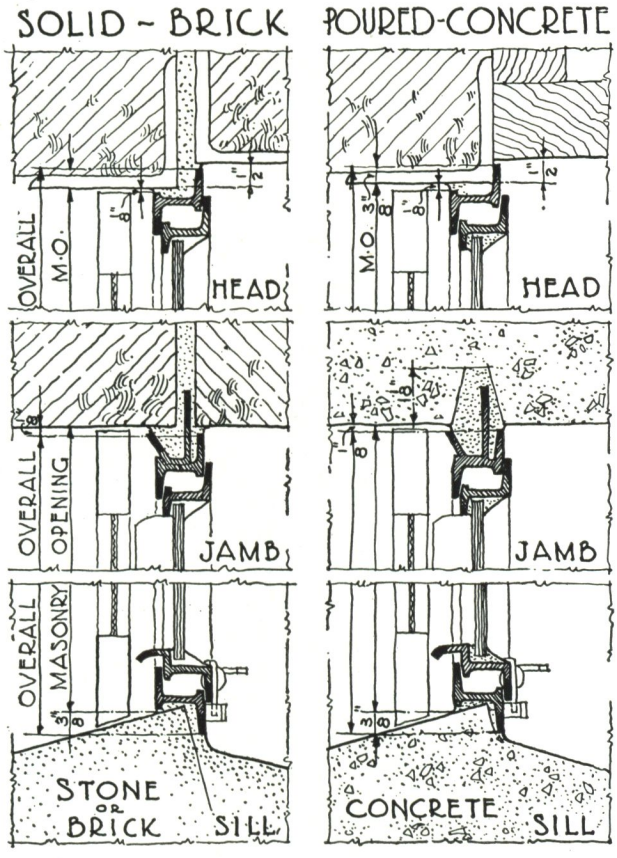


HINGE WITH SASH UNATTACHED



CAM ACTING LOCK AT THE SILL

Cam action lock at sill. Hinges of substantial hook design make sash easily removable. Sill and jambs of frame in one continuous piece mitered and welded at corners. Jamb fins, spot welded to frame provide solid anchorage.

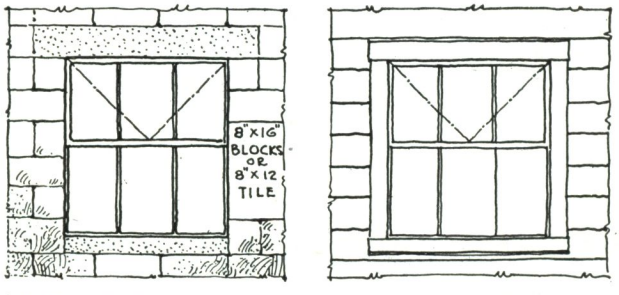


FENESTRA "UTILITY" WINDOWS

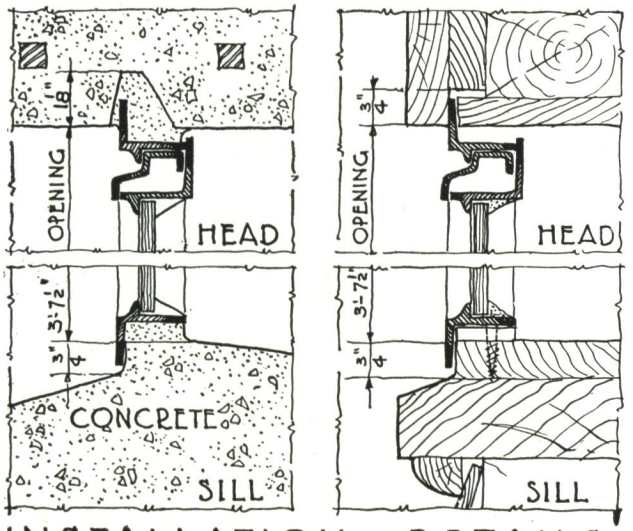
The Fenestra Utility Window is designed for small buildings, such as garages, and for basements high above the grade line.

It is made in one size only, 3'4" x 3'7".

Ventilator is one-light high of the projected-in type, equipped with iron spring catch at head.



ELEVATION OF WINDOWS INSTALLED IN CONCRETE BLOCK AND FRAME CONSTRUCTION



INSTALLATION ~ DETAILS.
SCALE 3" = 1'-0"

Continued on next page

Fenestra

STEEL WINDOWS FOR INDUSTRIAL BUILDINGS

MEMBER SOLID SECTION STEEL WINDOW INDUSTRY

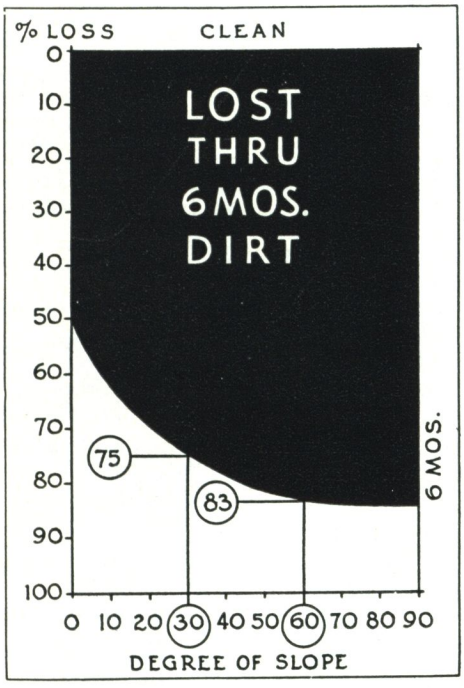
Factories: Detroit, Michigan; Cleveland, Ohio and Oakland, California
General Offices: 2250 East Grand Boulevard, Detroit, Michigan
Local Offices in 217 Cities

DEPARTMENT OF ENGINEERING RESEARCH

DESIGNERS of industrial buildings often write us regarding problems of daylighting or ventilation. To answer such inquiries adequately, we have established a Department of Engineering Research which operates in connection with the Department of Engineering Research at the University of Michigan.

Laboratory work and field surveys over a period of years have developed certain principles, through the application of which it is possible to determine *in advance of construction* just what the daylighting or ventilating characteristics of any building will be.

Frequently it is possible for this department to make suggestions in the design of window lay-out to provide better daylighting and more effective ventilation. This service is absolutely free and implies no obligation whatever. For any one who desires it, our Research Engineers will do their best to predetermine the daylighting and airation (natural ventilation) characteristics of any building. In this way we hope to contribute to the improvement of industrial construction, as we have done in the past.



Typical chart showing loss of daylighting through failure to wash the factory windows for six months. Vertical windows, 50% loss; Sloping windows, 75% loss; Skylights, 83% loss

Consideration of daylighting and airation may be secured by consultation with the nearest Fenestra office or by writing the Home Office at Detroit. For those who wish a non-technical presentation of the findings of this department, two booklets are available: "Industrial Daylighting by the Fenestra Method" and "Industrial Airation by the Fenestra Method." Either or both are free on request.

Continued on next page

FENESTRA PIVOTED WINDOWS

SPECIFICATIONS

Notes are explanatory only and need not be included in the specifications.

GENERAL

HORIZONTALLY PIVOTED WINDOWS shall be Fenestra as manufactured by the Detroit Steel Products Company.

MATERIAL

All sections shall be especially designed, hot rolled, solid steel bars with heavy fillets in all re-entrant angles.

All frame members shall be special angle sections.

MUNTINS shall be especially formed T sections.

MULLIONS AND TRANSOM BARS shall be standard Fenestra, hot rolled, solid steel T sections.

(Note:—Use mullions where two or more windows are used side by side in the same opening. Use transom bars where two or more windows are used one above another. Horizontal structural mullions are not furnished by the window manufacturer.)

CONSTRUCTION

FRAMES AND VENTILATORS shall be mortise and tenon, air hammer riveted at all corners. Provide continuous two-point, flat-contact weathering between ventilators and frames.

MUNTINS shall be continuous from head to sill and from jamb to jamb, so interlocked as to increase their strength at the point of intersection. Joints at frames shall be mortise and tenon, air hammer riveted.

(Note:—All structural steel is furnished by others. Include in the steel specifications all punching to accommodate clips. Where masonry will interfere with installation of clips at time windows are erected, provide that all clip bolts be included and attached by steel contractor.)

ATTACHED HARDWARE

(Note:—Attach at the factory.)

All ventilators shall be horizontally pivoted and supported by external adjustable, special solid rolled steel butts, double machine riveted through window bars and weathering.

(Note:—Butts are set 2" above center unless otherwise specified. They may be set 4" below top of ventilator. If desired, so specify.)

All butts shall have 5/8" solid steel bolts equipped with washers and nuts; each pin shouldered to insure constant, free and easy ventilator operation.

All ventilators shall be provided with solid rolled steel Z bar brackets, triple machine riveted to ventilator sill for attachment of operating hardware.

DETACHED HARDWARE

Provide malleable iron cam latches and rolled steel stay bars or malleable iron latches, chain, chain catches and pulley brackets.

(Note:—For group operation of ventilators see Fenestra Mechanical Operating Devices.)

ERECTION

(Note:—Include in the Masonry Specifications that all masonry openings shall be accurately constructed in accordance with standard Fenestra installation details so that windows may be erected in prepared openings.)

(Note:—Include in the Masonry Specifications that all mortar grouting, pointing, etc., shall be done by the mason contractor after the windows are erected.)

All windows shall be erected in prepared openings by the Fenestra Construction Company under a separate contract.

All windows shall be set plumb and true, properly aligned and securely anchored before glazing.

Standard Fenestra sill anchors (2 for windows up to 6'6" wide; 4 for windows over 6'6" wide) shall be used: if the ventilator comes to the sill of the window; if the window is over 5'0" wide; in all multiple unit openings where the mullions are not anchored into the sills.

PAINTING

All windows shall be given one dip-coat of red mineral paint by the manufacturer before shipment.

(Note:—Include in the Painting Specifications that all windows should be given one additional coat after erection but before glazing. Further painting should be deferred until at least three weeks after glazing, to allow putty to set.)

(Note:—Where desired, Fenestra Construction Company, at reasonable added cost, will do field painting after erection. If desired, so specify including specification of paint and its application.)

GLASS AND GLAZING

(Note:—Include in the Glazing Specifications that glass sizes are to be either 12" x 18" or 14" x 20" but ventilator lights which abut on top, sides, or bottom of the ventilator must be trimmed 1" along the abutting edge.)

Glass shall be 1/4" rough wire, 1/4" factory ribbed, 1/8" factory ribbed, double strength.

(Note:—1/4" glass is recommended. Single strength glass is not recommended.)

Putty shall be a high grade of steel window putty.

(Note:—Ordinary wood sash putty must not be used.)

All windows shall be glazed from the inside, all glass being set in a bed of putty and secured by copper plated, steel spring glazing clips furnished by the window manufacturer. (4 clips to each fixed light; 6 clips to each ventilator light.) Face putty shall be applied in a neat, clean-cut smooth manner.

(Note:—Do not paint until putty has thoroughly hardened.)

SCREENS

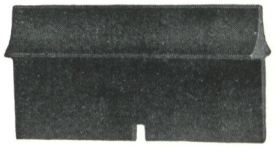
(Note:—Screens are not furnished by the window manufacturer but special metal screens may be had so arranged that the upper half of the screen is outside the ventilator, the lower half, inside.)

UNDERWRITERS

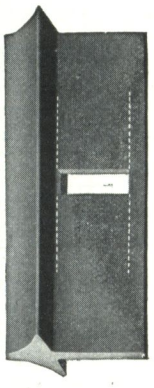
(Note:—Under certain conditions and limitations these windows can be supplied with Underwriters' Label.)

Continued on next page

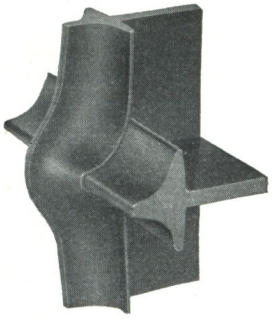
PIVOTED WINDOW FITTINGS AND HARDWARE



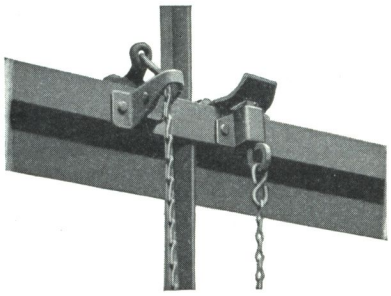
Horizontal Bar with Nick Cut Out



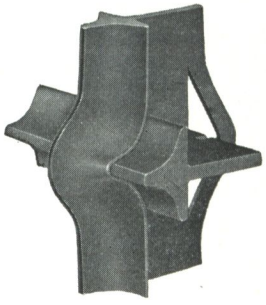
Vertical Bar Punched for Joint



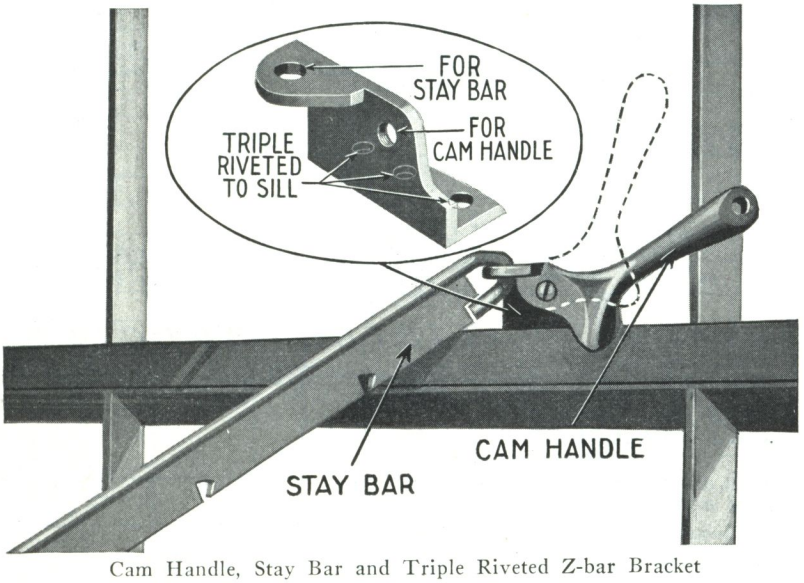
The Completed Fenestra Joint



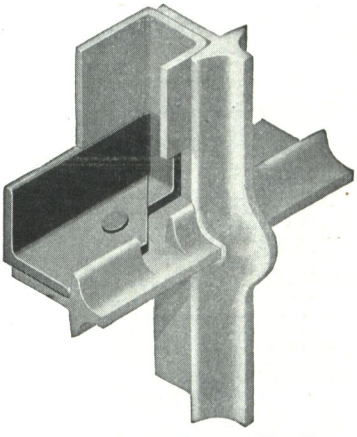
Spring Latch, Chain and Pulley at Head of Ventilator



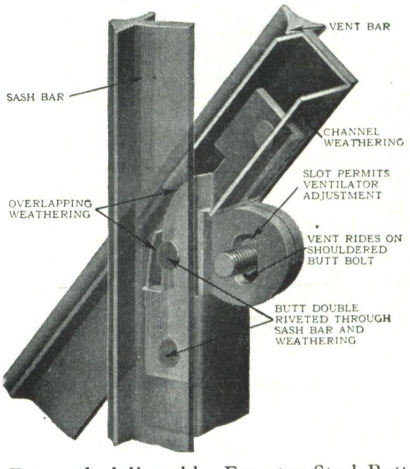
Vertical Bar Expanded to Receive Horizontal Bar



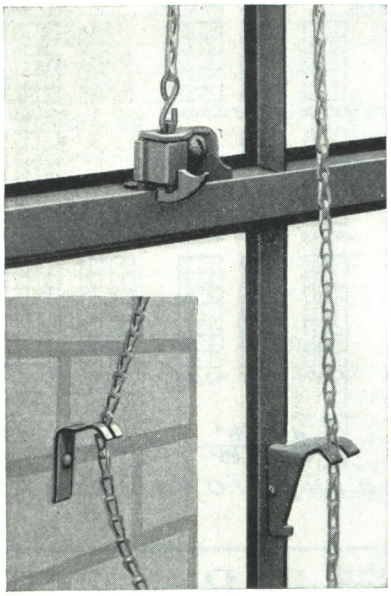
Cam Handle, Stay Bar and Triple Riveted Z-bar Bracket



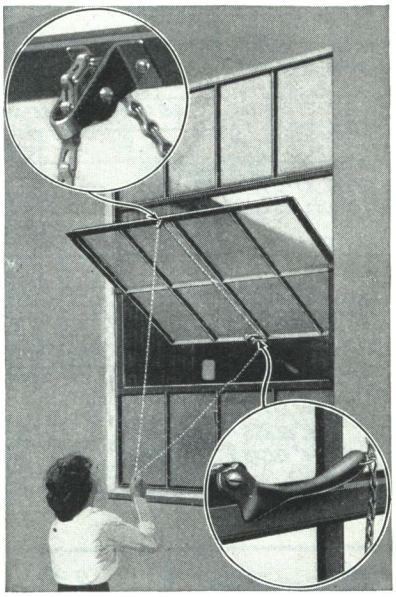
Weathering Member at Ventilator Sill, Mitered to Guide Water from Building



External, Adjustable, Fenestra Steel Butt

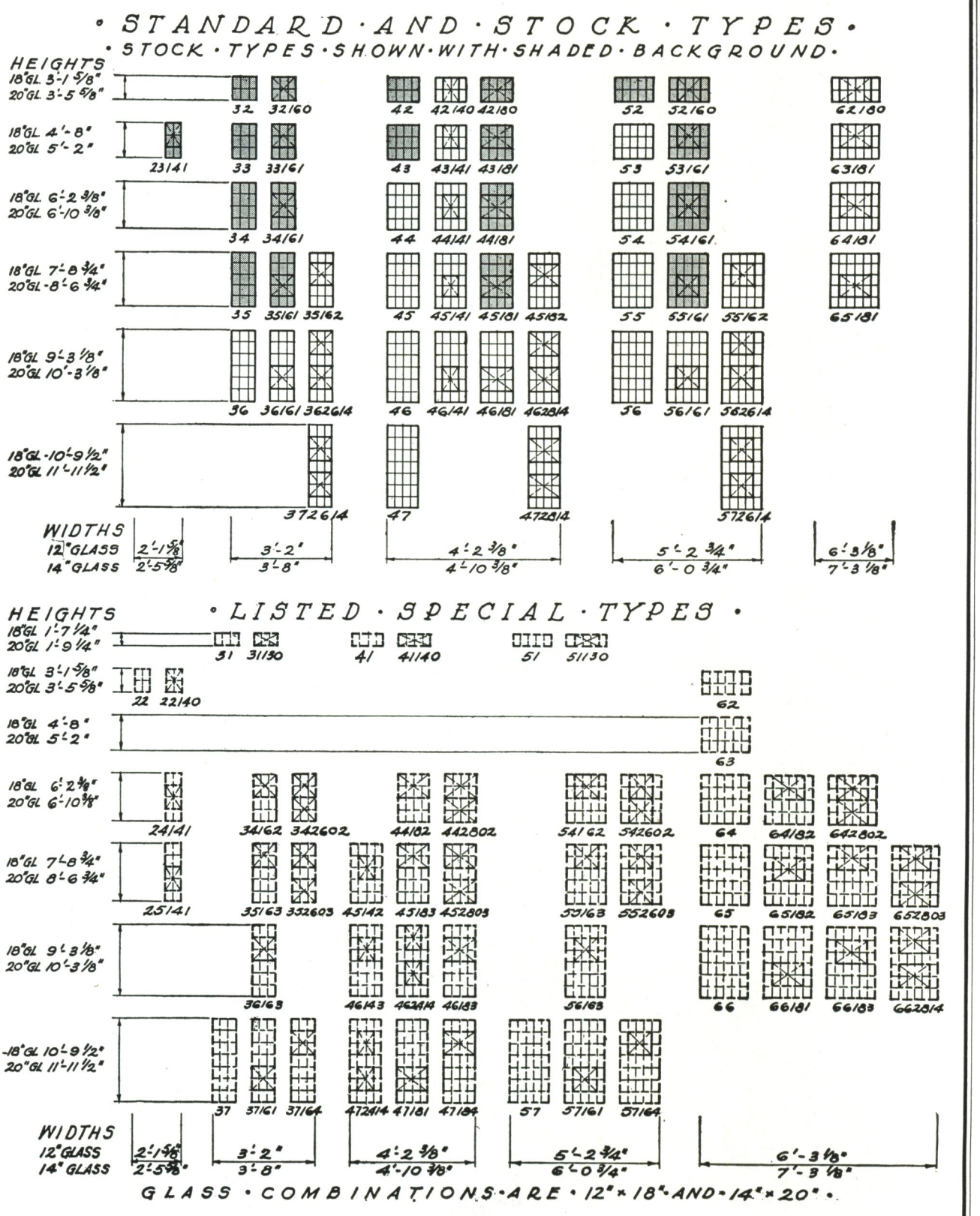


Spring Latch at Sill, Chain Cleats and Chain Passing up over Head Pulley



Cam Handle at Sill with Endless Chain Passing over Pulley at Head

Continued on next page



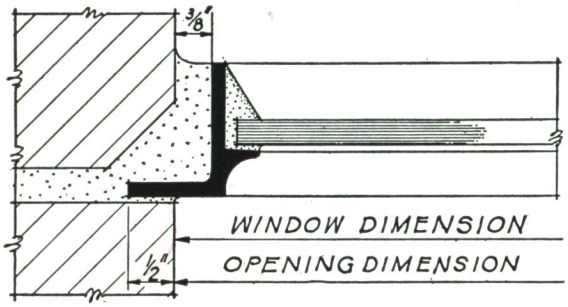
Fenestra, August 1929	*Horizontally Pivoted Windows* *Types and Sizes*	Plate No. L-102

Continued on next page

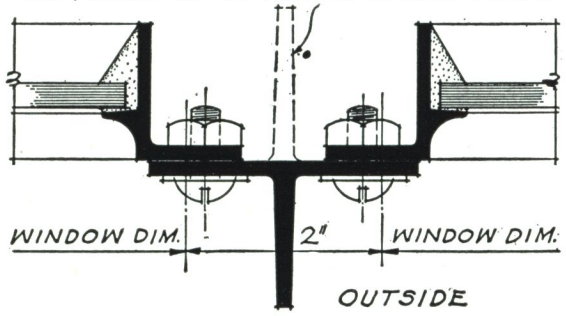
SYMMETRICAL COMBINATIONS

OPENING DIMENSIONS				NO. UNITS IN OPENING	NO. LIGHTS IN OPENING	ARRANGEMENT OF UNITS IN OPENING. FIGURES INDICATE THE NUMBER OF LIGHTS IN WIDTH OF EACH UNIT.
18" HEIGHTS		20" HEIGHTS				
PANES	DIM.	PANES	DIM.			
2	3'-1 5/8"	2	3'-5 5/8"			
3	4'-8"	3	5'-2"			
4	6'-2 3/8"	4	6'-10 3/8"			
5	7'-8 3/4"	5	8'-6 3/4"			
6	9'-3 1/8"	6	10'-3 1/8"			
7	10'-9 1/2"	7	11'-11 1/2"			
12" WIDTHS		14" WIDTHS				
* 2'-1 5/8"		* 2'-5 5/8"		1	2	2
3'-2"		3'-8"		1	3	3
4'-2 3/8"		4'-10 3/8"		1	4	4
4'-5 1/4"		5'-1 1/4"		2	4	2,2
5'-2 3/4"		6'-0 3/4"		1	5	5
6'-3 1/8"		7'-3 1/8"		1	6	6
6'-6"		7'-6"		2	6	3,3
8'-6 3/4"		9'-10 3/4"		2	8	4,4
9'-10"		11'-4"		3	9	3,3,3
10'-7 1/2"		12'-3 1/2"		2	10	5,5
10'-10 3/8"		12'-6 3/8"		3	10	3,4,3
11'-10 3/4"		13'-8 3/4"		3	11	3,5,3
11'-10 3/4"		13'-8 3/4"		3	11	4,3,4
12'-8 1/4"		14'-8 1/4"		2	12	6,6
12'-11 1/8"		14'-11 1/8"		3	12	4,4,4
13'-2"		15'-2"		4	12	3,3,3,3
13'-11 1/2"		16'-1 1/2"		3	13	4,5,4
13'-11 1/2"		16'-1 1/2"		3	13	5,3,5
14'-11 7/8"		17'-3 7/8"		3	14	4,6,4
14'-11 7/8"		17'-3 7/8"		3	14	5,4,5
15'-2 3/4"		17'-6 3/4"		4	14	3,4,4,3
16'-0 1/4"		18'-6 1/4"		3	15	5,5,5
16'-0 1/4"		18'-6 1/4"		3	15	6,3,6
16'-6"		19'-0"		5	15	3,3,3,3,3
17'-0 5/8"		19'-8 5/8"		3	16	5,6,5
17'-0 5/8"		19'-8 5/8"		3	16	6,4,6
17'-3 1/2"		19'-11 1/2"		4	16	4,4,4,4
17'-3 1/2"		19'-11 1/2"		4	16	3,5,5,3
17'-6 3/8"		20'-2 3/8"		5	16	3,3,4,3,3
18'-1"		20'-11"		3	17	6,5,6
18'-6 3/4"		21'-4 3/4"		5	17	3,4,3,4,3
19'-1 3/8"		22'-1 3/8"		3	18	6,6,6
19'-4 1/4"		22'-4 1/4"		4	18	3,6,6,3
19'-4 1/4"		22'-4 1/4"		4	18	4,5,5,4
19'-7 1/8"		22'-7 1/8"		5	18	3,4,4,4,3
20'-7 1/2"		23'-9 1/2"		5	19	3,5,3,5,3
21'-5"		24'-9"		4	20	5,5,5,5
21'-5"		24'-9"		4	20	4,6,6,4
21'-7 7/8"		24'-11 7/8"		5	20	4,4,4,4,4
21'-10 3/4"		25'-2 3/4"		6	20	3,3,4,4,3,3

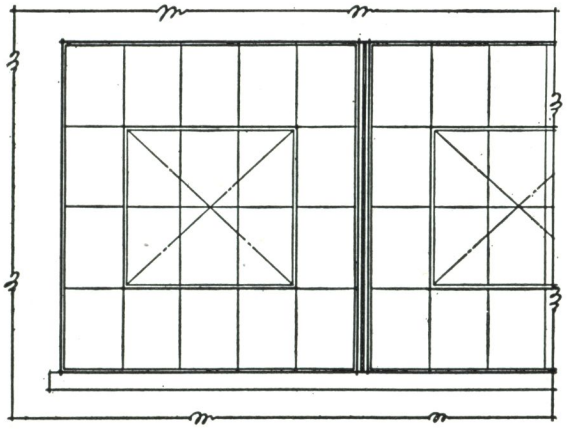
* TWO LIGHT WIDE UNITS ARE FURNISHED IN THREE LIGHT HEIGHTS ONLY

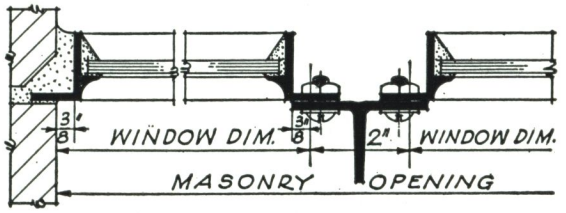


WHEN DESIRED STEM OF MULLION CAN BE TURNED IN AS SHOWN BY DOTTED LINES



SCALE: HALF FULL SIZE





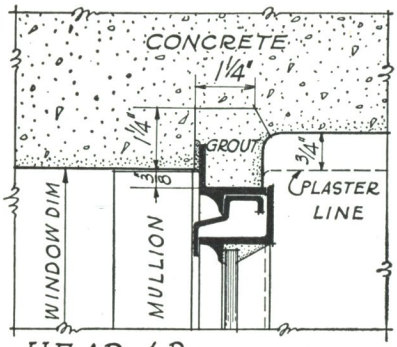
TYPICAL COMBINATION

SCALE: 3" = 1'-0"

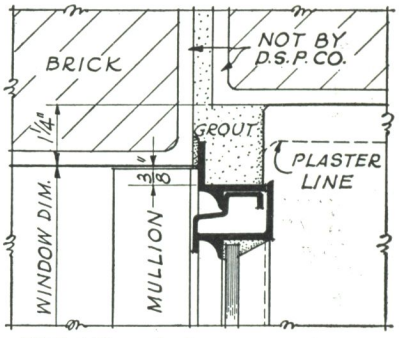
NOTE:- IN FIGURING OPENING SIZES FOR COMBINED UNITS, ADD TOGETHER THE WINDOW DIMENSIONS PLUS 2" FOR EACH VERTICAL MULLION. STANDARD COMBINATIONS ARE GIVEN IN THE TABLE. WHEN USING TABLE ALWAYS COMBINE 18" HEIGHTS WITH 12" WIDTHS AND 20" HEIGHTS WITH 14" WIDTHS.

Fenestra, August 1929	Horizontally Pivoted Windows Standard Combinations	Plate No. L-103

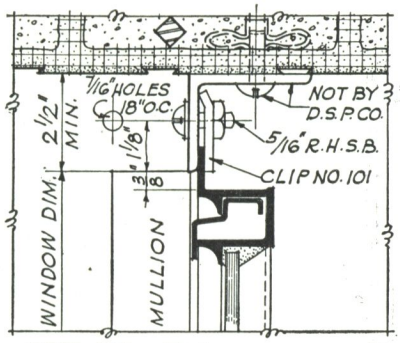
Continued on next page



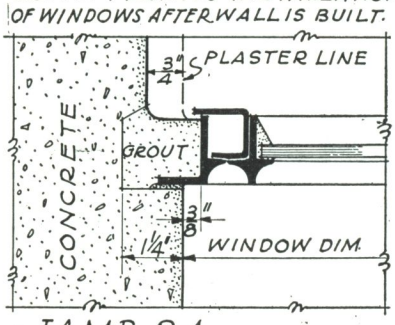
"HEAD-1-B" REBATE IN THE SOFFIT PERMITS INSTALLATION OF WINDOWS AFTER WALL IS BUILT.



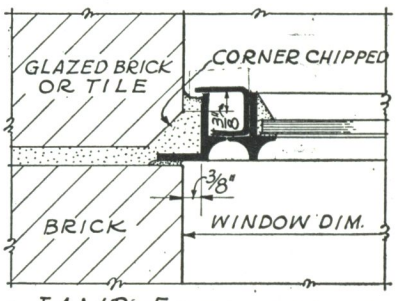
"HEAD-4-A" ANGLE SHOULD ALWAYS BE OFFSET AS SHOWN



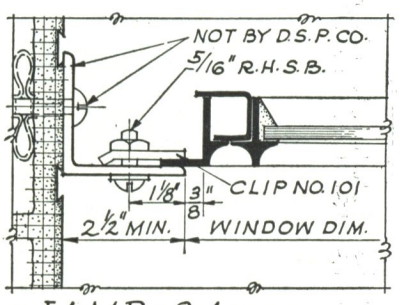
"HEAD-7-A" STEEL ANGLE FRAME IN TILE OPENINGS.



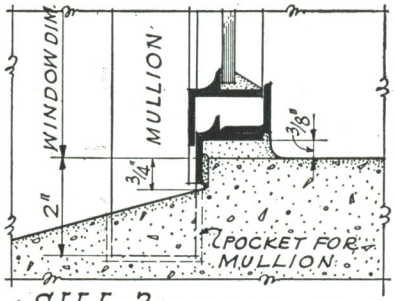
"JAMB-2-A" FOR SINGLE OR MULTIPLE UNIT OPENINGS



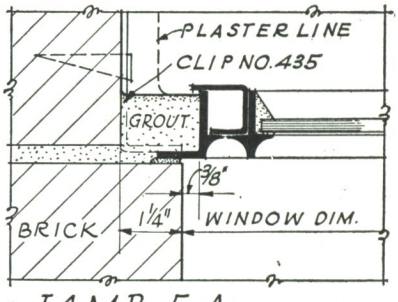
"JAMB-5" FOR MULTIPLE UNIT OPENINGS ONLY



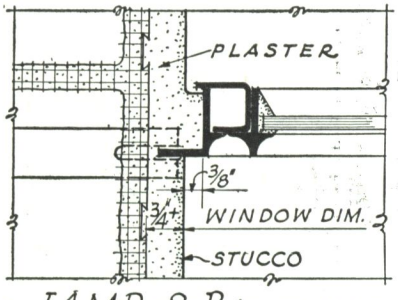
"JAMB-8-A" STEEL ANGLE FRAME IN TILE OPENINGS.



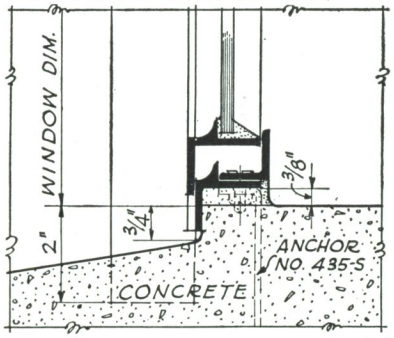
"SILL-3" PRECAST CONCRETE MAY ALSO BE USED FOR BRICK OR TILE CONSTRUCTION



"JAMB-5-A" FOR SINGLE OR MULTIPLE UNIT OPENINGS.

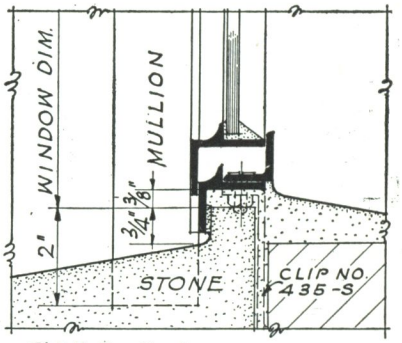


"JAMB-8-B" WITH SPLIT CLIP FURNISHED BY D.S.P. CO.



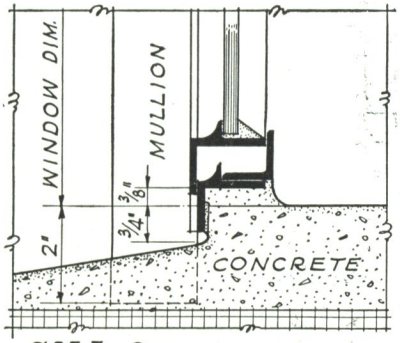
"SILL-3-A" POURED CONCRETE ANCHOR CLIP FURNISHED BY D.S.P.CO.

"CONCRETE"



"SILL-6-A" CUT STONE. AS ALTERNATES USE DETAILS 3 OR 3-A.

"BRICK"



"SILL-9" CONCRETE SILL, POURED AFTER WINDOW IS SET

"TILE"

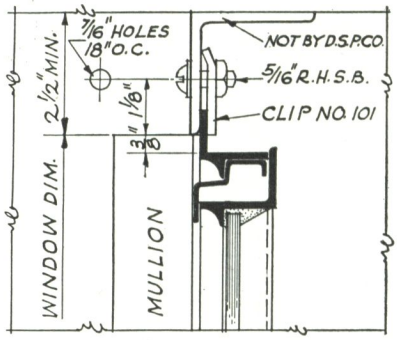
"SCALE: 3" = 1'-0"

Fenestra, August 1929

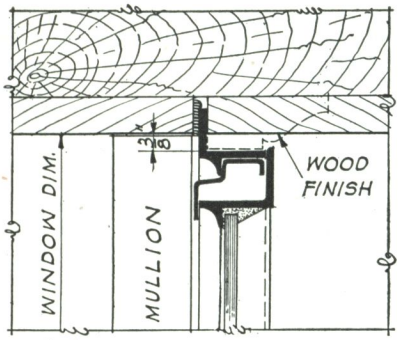
Horizontally Pivoted Windows
Installation Details

Plate No. L-104

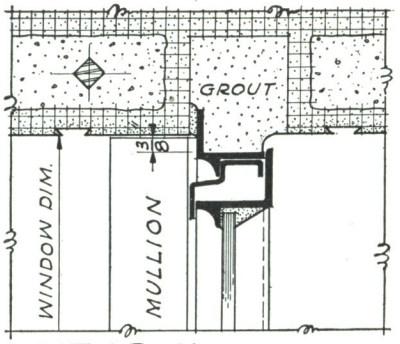
Continued on next page



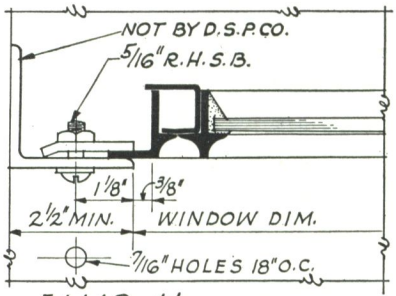
"HEAD-10" STEEL ANGLE.
CLIP & BOLT FURNISHED BY D.S.P.CO.



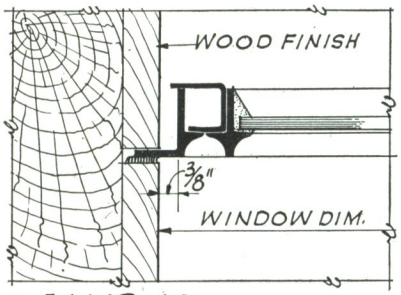
"HEAD-13" DOTTED LINES SHOW ALTERNATE FINISH."



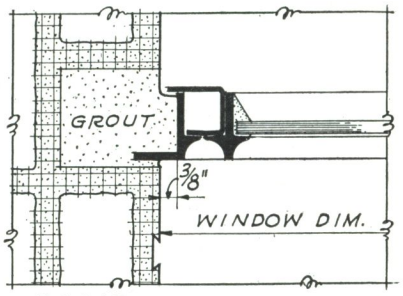
"HEAD-7" FOR TILE LINTEL WITH STEEL WINDOW RAGGLE AS SHOWN



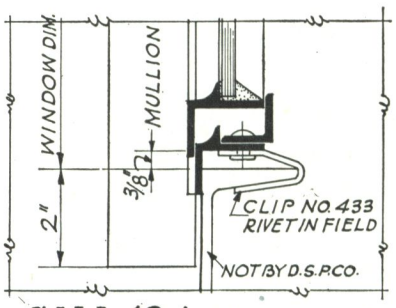
"JAMB-11" STEEL ANGLE.
CLIP & BOLT FURNISHED BY D.S.P.CO.



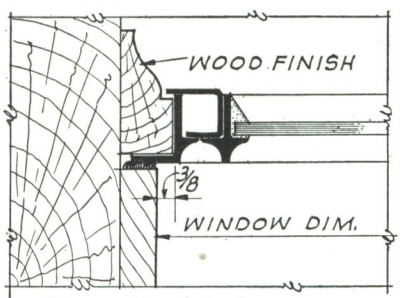
"JAMB-14" PLAIN TRIM.



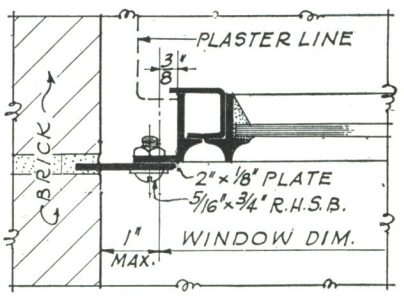
"JAMB-8" FOR TILE WITH STEEL WINDOW RAGGLE AS SHOWN.



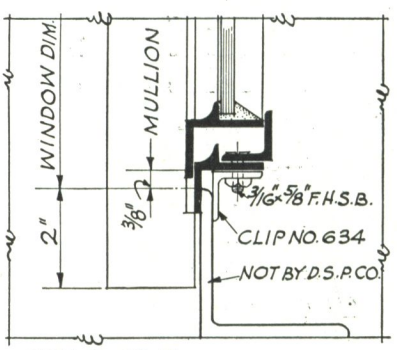
"SILL-12-A" STEEL CHANNEL
CLIP & RIVET FURNISHED BY D.S.P.CO.



"JAMB-14-A" MOLDING FINISH ALTERNATE FOR JAMB-14

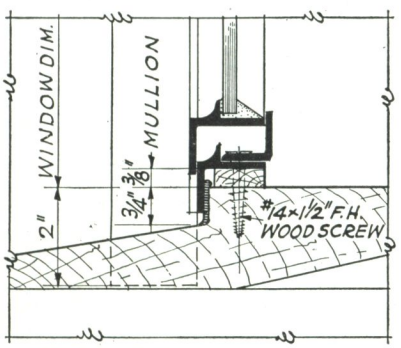


"JAMB-5-B" DETAIL USING JAMB PLATE"



"SILL-12-B" STEEL ANGLE.
CLIP & BOLT FURNISHED BY D.S.P.CO.

"STEEL"



"SILL-15" WOOD APRON & SILL.

"WOOD"

"MISCELLANEOUS"

THE MULLIONS SHOWN WITH THESE DETAILS HAVE THE STEM TURNED OUT. IT IS ADVISABLE TO DO THIS AS GREATER STIFFNESS IS SECURED.

WITH STEEL WORK THIS IS ESSENTIAL IN ORDER TO AVOID NOTCHING OF THE STEEL OR A SPECIAL CUT-OFF OF MULLIONS.

ANCHORING MULLIONS AT SILL AS SHOWN IS RECOMMENDED.

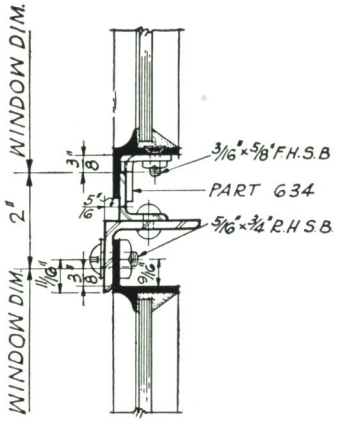
"SCALE: 3" = 1'-0"

Fenestra August 1929

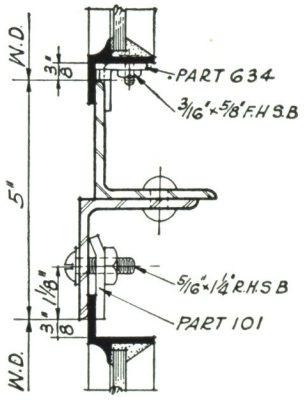
Horizontally Pivoted Windows
Installation Details

Plate No. L-105

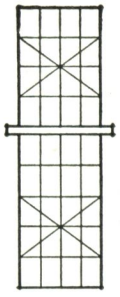
Continued on next page



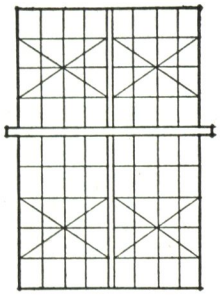
• TYPE - 1 •



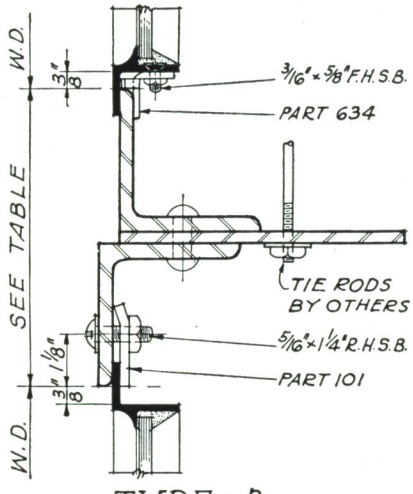
• TYPE - 2 •



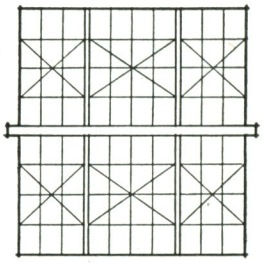
• TYPICAL OPENING • TYPE NO. 1



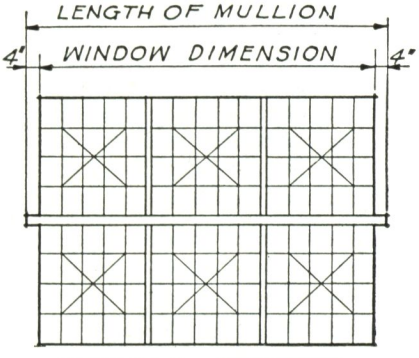
• TYPICAL • OPENING • TYPE • NO. 2 •



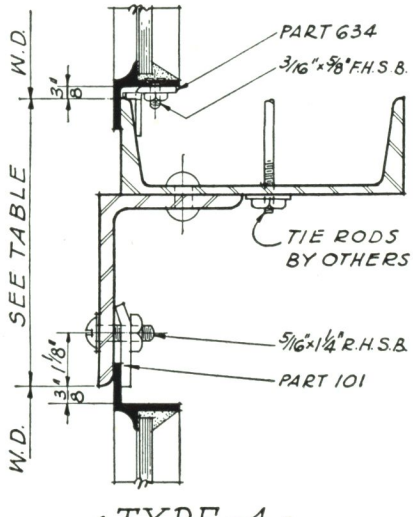
• TYPE - 3 •



• TYPICAL • OPENING • TYPES • NO. 3 & 4 •



• TYPICAL • OPENING • TYPES • NO. 3 & 4 •



• TYPE - 4 •

• DETAILS • SCALE. 3" - 1'-0" •

• TABLE • OF • HORIZONTAL • • MULLION • SIZES •

LIGHTS WIDE	MULL. TYPE NO.	• ANGLES • REQ'D	• SIZE •	PLATE OR CHANNEL	ESTIMATED WEIGHT OF MULL PER FT.	BETWEEN WINDOW DIMENS.
SINGLE UNIT OPENINGS	1	1	1" x 1" x 1/8"	NONE	3.0 LBS	2"
		1	2" x 1 1/2" x 3/16"			
• 12" x 18" SIZE GLASS •						
3 TO 9	2	2	2 1/2" x 2 1/2" x 3/16"	NONE	6.5 LBS	5"
10 TO 13	3	2	2 1/2" x 2 1/2" x 3/16"	6" x 1/4" PLT.	11.5 LBS.	5 1/4"
10 TO 13	4	1	3 1/2" x 2 1/2" x 1/4"	4" CHANNEL	10.5 LBS	5 1/4"
14 TO 18	3	2	3" x 3" x 5/16"	6" x 1/4" PLT.	17.5 LBS.	6 1/8"
14 TO 18	4	1	4" x 3" x 5/16"	6" CHANNEL	15.5 LBS.	6 1/8"
• 14" x 20" SIZE GLASS •						
3 TO 8	2	2	2 1/2" x 2 1/2" x 3/16"	NONE	6.5 LBS.	5"
9 TO 11	3	2	2 1/2" x 2 1/2" x 3/16"	6" x 1/4" PLT	11.5 LBS	5 1/4"
9 TO 11	4	1	3 1/2" x 2 1/2" x 1/4"	4" CHANNEL	10.5 LBS	5 1/4"
12 TO 16	3	2	3" x 3" x 5/16"	6" x 1/4" PLT.	17.5 LBS.	6 1/8"
12 TO 16	4	1	4" x 3" x 5/16"	6" CHANNEL	15.5 LBS	6 1/8"

TIE RODS SHOULD SUPPORT HOR. MULLION IN OPNGS. OVER 10'-0"

• SCALE 3" = 1'-0" •

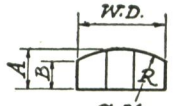
Fenestra August 1929

Horizontally Pivoted Windows
Horizontal Mullion Details

Plate No. L-107

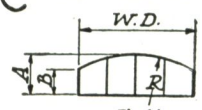
Continued on next page

CAMBER HEAD UNITS ONE PANE HIGH



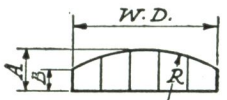
C-31

12"×18"	14"×20"
3'-2" - W.D. -	3'-8"
1'-6 1/8" - A -	1'-8 1/8"
1'-1" - B -	1'-2 1/4"
3'-2" - R -	3'-8"



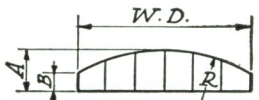
C-41

12"×18"	14"×20"
4'-2 3/8" - W.D. -	4'-10 3/8"
1'-6 1/8" - A -	1'-8 1/8"
-11 3/8" - B -	1'-0 5/16"
4'-2 3/8" - R -	4'-10 3/8"



C-51

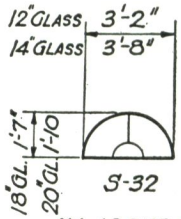
12"×18"	14"×20"
5'-2 3/4" - W.D. -	6'-0 3/4"
1'-6 1/8" - A -	1'-8 1/8"
-9 1/16" - B -	-10 3/8"
5'-2 3/4" - R -	6'-0 3/4"



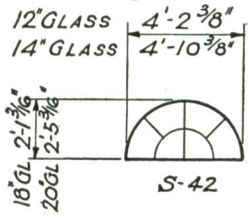
C-61

12"×18"	14"×20"
6'-3 1/8" - W.D. -	7'-3 1/8"
1'-6 1/8" - A -	1'-8 1/8"
-8 1/16" - B -	-8 7/16"
6'-3 1/8" - R -	7'-3 1/8"

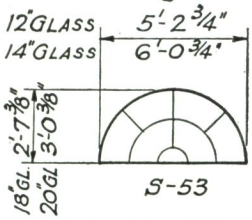
SEMICIRCULAR UNITS NOT OVER SIX PANES WIDE



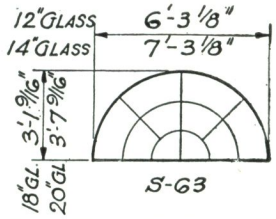
S-32



S-42



S-53



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* ALL ABOVE CAMBER HEAD AND SEMICIRCULAR UNITS HAVE NO. 70 SECTION AT SILL FOR ATTACHMENT TO TOP OF SINGLE SQUARE HEAD UNIT, OR FOR INDIVIDUAL INSTALLATION. SEE FIG.-1 BELOW.

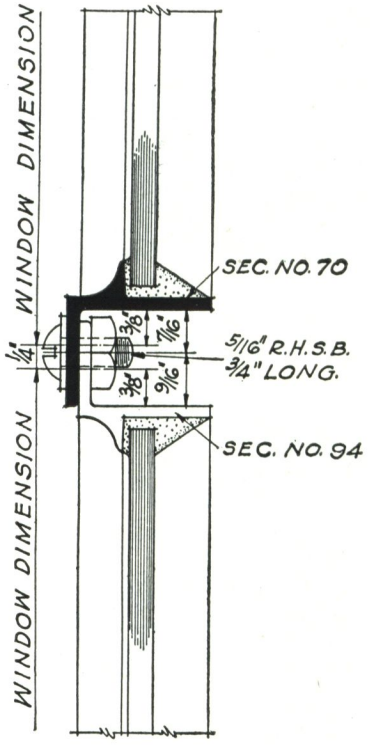


FIG.-1

SECTION THRU UNIT UP TO AND INCLUDING SIX PANES IN WIDTH.

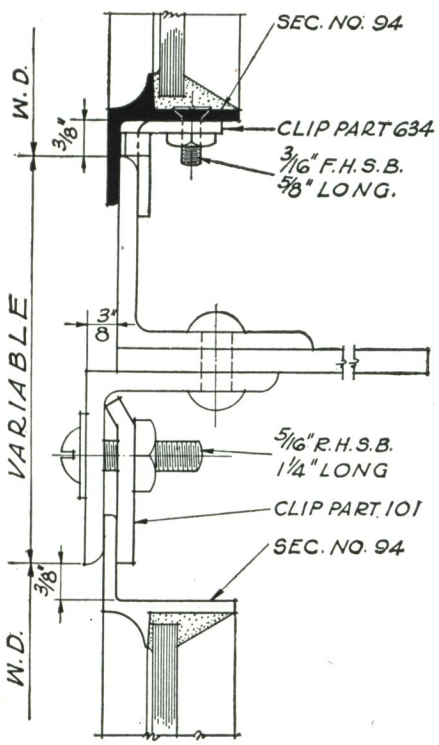
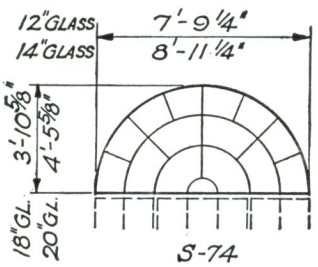


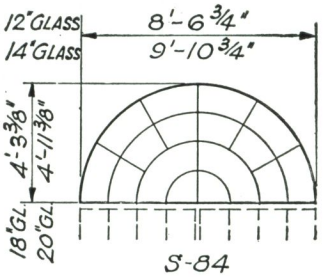
FIG.-2

SECTION THRU UNIT OVER SIX PANES IN WIDTH.

SEMICIRCULAR UNITS MORE THAN SIX PANES WIDE



S-74



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SEMICIRCULAR UNITS MORE THAN SIX PANES WIDE HAVE NO. 94 SECTION AT SILL FOR ATTACHMENT TO MULTIPLE UNIT OPENING WITH STRUCTURAL HORIZONTAL MULLION, OR FOR INDIVIDUAL INSTALLATION. SEE FIG. 2

DETAILS SCALE: HALF FULL SIZE

Fenestra August 1929

Horizontally Pivoted Windows
Camber and Semi-Circular Heads

Plate No L-109

Continued on next page

FENESTRA PROJECTED WINDOWS

COMMERCIAL TYPE—SPECIFICATIONS

For nomenclature of individual types refer to standard drawings or price sheets obtainable from local Fenestra representatives.

Notes are explanatory or advisory only and need not be included in specifications.

GENERAL

Windows shall be Fenestra Commercial Projected as manufactured by Detroit Steel Products Company.

MATERIAL—CONSTRUCTION

(Note:—Same as these specifications for Fenestra Horizontally Pivoted Windows.)

ATTACHED HARDWARE

(Note:—Attach at the factory.)

Ventilators shall swing out from the bottom while sliding down from the top or swing in from the top while sliding up from the bottom, as indicated. The *open-out* ventilators shall be so constructed that by tilting them slightly beyond the horizontal they may be conveniently washed from inside the building. The *open-in* ventilators shall tilt to 90°.

(Note:—Specify swing-out, swing-in or both as required.)

Each ventilator shall be accurately balanced on two supporting arms of solid spring steel attached to the ventilator with bronze shoulder pivots, equipped with bronze washers. Connections between supporting arms and window frame shall be made by malleable iron brackets rigidly supported on the horizontal frame members or muntins and double riveted to the vertical frame members or muntins with arms attached by bronze shoulder pivots.

Each ventilator shall be equipped with two channel shaped bronze friction shoes sliding vertically in the ventilator jambs and so constructed that through galvanized compression springs uniform tension is secured. Shoes shall be accurately gauged and located and solidly riveted in place to assure proper, constant pressure at the jambs.

Each *open-out* ventilator shall be equipped with two shouldered, alignment control bronze springs riveted to the channel jambs.

(Note:—The shoulders of these springs are so designed and located as to limit the downward travel of the friction shoes and stop all open ventilators in uniform alignment of approximately 60 degrees. When it is desired to open the ventilator at a greater angle or reverse for washing, light pressure on the springs depresses the shoulders and allows the friction shoes to slide past. As the ventilator is returned to a closed position, the action of the spring is automatic.)

Each *open-in* ventilator shall be equipped with a solid steel stop which prevents its opening farther than 90°.

DETACHED HARDWARE

All hardware shall be (malleable iron) (bronze).

(Note:—Bronze at added cost over iron.)

Locking and Operating Devices.

(Note:—Where ventilators are screened, special flat type handles may be secured at added cost, which will permit the screen to set 1" from the face of the window instead of 2" necessary with standard handles.)

(1) *For open-out ventilators within reach from floor*—Malleable iron cam handle attached to Z bar bracket by bolt and nut, Part 150.

(2) *For open-out ventilators beyond reach from floor*—Riveted malleable iron pole hook ring at head of ventilator, Part 151, malleable iron cam handle, Part 150.

(3) *For open-in ventilators within reach from floor*—Riveted malleable iron spring latch with finger ring handle at head of ventilator, Part 147.

(4) *For open-in ventilators beyond reach from floor*—Riveted malleable iron spring latch with endless chain, Part 146, at head of ventilator. Riveted iron chain guide, Part 149, at sill, or riveted malleable iron spring latch with pole hook ring handle, Part 147, at head.

ERECTION—PAINTING—GLAZING

(Note:—Same as these specifications for Horizontally Pivoted Windows.)

PROVISIONS FOR SCREENS

(Note:—Include in the Carpentry Specifications the necessary clauses covering wood trim required in conjunction with screens. Space between inside screen and window must not be less than 2" to clear standard hardware. If special flat type handles are used, 1" clearance only is required. On account of roller, rolling screens require 2½" clearance.

For *open-in ventilators* provide permanent brackets for removable screen supports.

SCREENS AND SHADES

(Note:—On open-out ventilators, metal side hinged or vertical sliding screens may be used as desired. Rolling screens up to 6'0" wide may be used where entire window is covered. On open-in ventilators, metal (removable) (fixed) outside screens may be used.)

(Note:—Where desired the window manufacturer will furnish, at reasonable added cost, removable tubular steel frame, rewirable screens (baked enameled finish) with No. 16 mesh bronze screen cloth. These screens are well constructed and furnished completely adapted to and fitting the ventilator opening.)

(Note:—All shades must be located at least 2" from the inside face of the window for hardware clearance.)

(Note:—Shade bracket clips, designed to attach by drilling and tapping two small holes at the top of each jamb section, are supplied at slight added cost. These clips are of sufficient depth to bring the shade bracket in the proper position and are slotted to accommodate any standard shade bracket. Shade clips cannot be used satisfactorily with rolling screens, but shade brackets may be attached to the under side of screen box.)

Continued on next page

ARCHITECTURAL TYPE—SPECIFICATIONS

ARCHITECTURAL PROJECTED WINDOWS are similar to Commercial Projected types in general construction and operation, but differ chiefly in the following particulars:

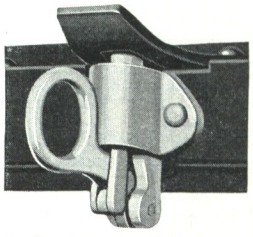
FRAME MEMBERS are unequal leg channel sections.

Standard types vary from 3′0″ wide to 5′0″ wide including 3′6″, 4′0″, and 4′6″. Standard heights vary from 4′6″ to 9′0″ and include 5′0″, 5′6″, 6′0″, 6′6″, 7′0″, 7′6″, 8′0″, and 8′6″.

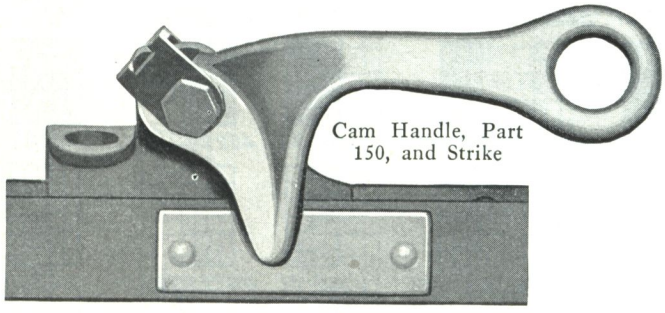
TRANSOM BARS are solid rolled steel Z bars and angles or structural angles and channels.

CAM HANDLE brackets are of malleable iron triple riveted to the ventilators.

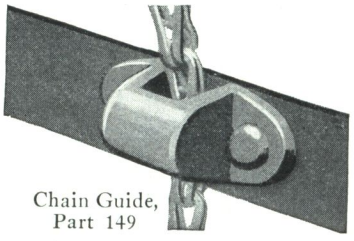
Hardware is of the same general design as that used on Commercial Projected Windows but is standardized in bronze with oxidized finish and includes Handles No. 114 and 212. Glass is held by glazing angles, neatly mitered at the corners.



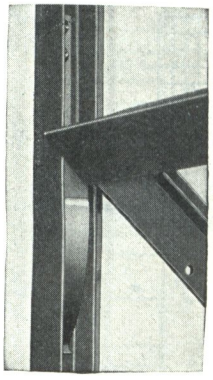
Spring Latch with Ring, Part 147



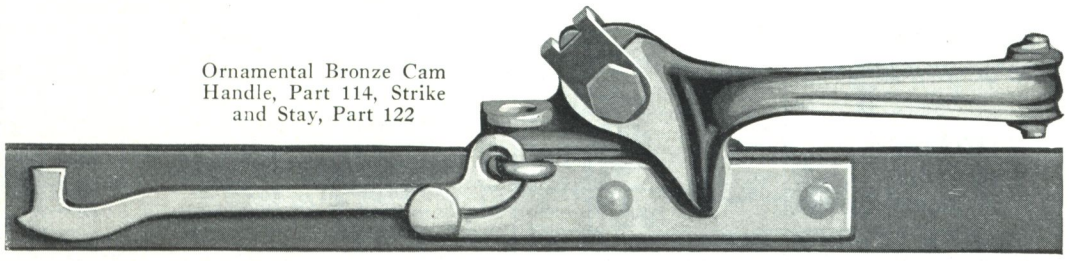
Cam Handle, Part 150, and Strike



Chain Guide, Part 149



Bronze Spring Alignment Stop

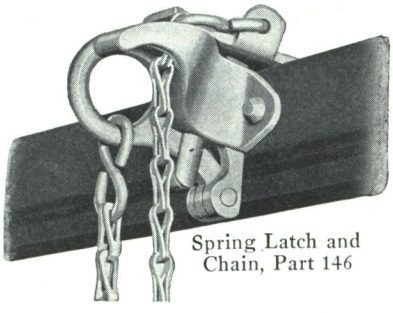


Ornamental Bronze Cam Handle, Part 114, Strike and Stay, Part 122

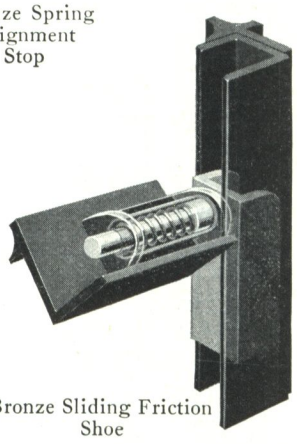
COMMERCIAL PROJECTED WINDOWS
Symmetrical Combined Widths

12″x18″ Glass	14″x20″ Glass	Units Wide	Lights Wide	No. of Units and Lights per Unit
2′ 1⅝″	2′ 5⅝″	1	2	2
3′ 2″	3′ 8″	1	3	3
4′ 2⅜″	4′ 10⅜″	1	4	4
4′ 5¼″	5′ 1¼″	2	4	2, 2
5′ 2¾″	6′ 0¾″	1	5	5
6′ 6″	7′ 6″	2	6	3, 3
8′ 6¾″	9′ 10¾″	2	8	4, 4
9′ 10″	11′ 4″	3	9	3, 3, 3
10′ 7½″	12′ 3½″	2	10	5, 5
10′ 10⅜″	12′ 6⅜″	3	10	3, 4, 3
11′ 10¾″	13′ 8¾″	3	11	3, 5, 3
12′ 11⅛″	14′ 11⅛″	3	12	4, 4, 4
13′ 11½″	16′ 1½″	3	13	4, 5, 4
13′ 11½″	16′ 1½″	3	13	5, 3, 5
14′ 11⅞″	17′ 3⅞″	3	14	5, 4, 5
15′ 2¾″	17′ 6¾″	4	14	3, 4, 4, 3
16′ 0¼″	18′ 6¼″	3	15	5, 5, 5
17′ 3½″	19′ 11½″	4	16	4, 4, 4, 4
19′ 4¼″	22′ 4¼″	4	18	4, 5, 5, 4
20′ 7½″	23′ 9½″	5	19	5, 3, 3, 3, 5
21′ 5″	24′ 9″	4	20	5, 5, 5, 5

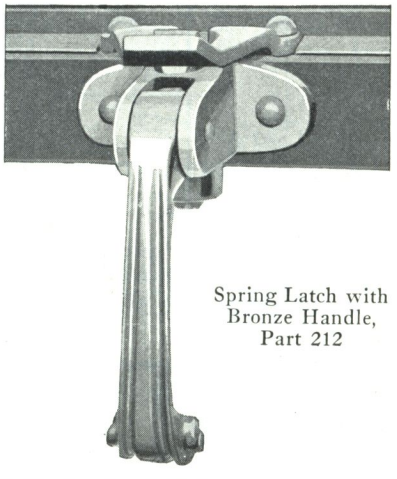
Combine width dimensions in Col. 1 with 12″ x 18″ glass height only.
Combine width dimensions in Col. 2 with 14″ x 20″ glass heights only.



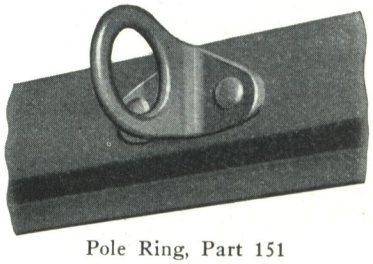
Spring Latch and Chain, Part 146



Bronze Sliding Friction Shoe



Spring Latch with Bronze Handle, Part 212



Pole Ring, Part 151

PROJECTED WINDOW HARDWARE

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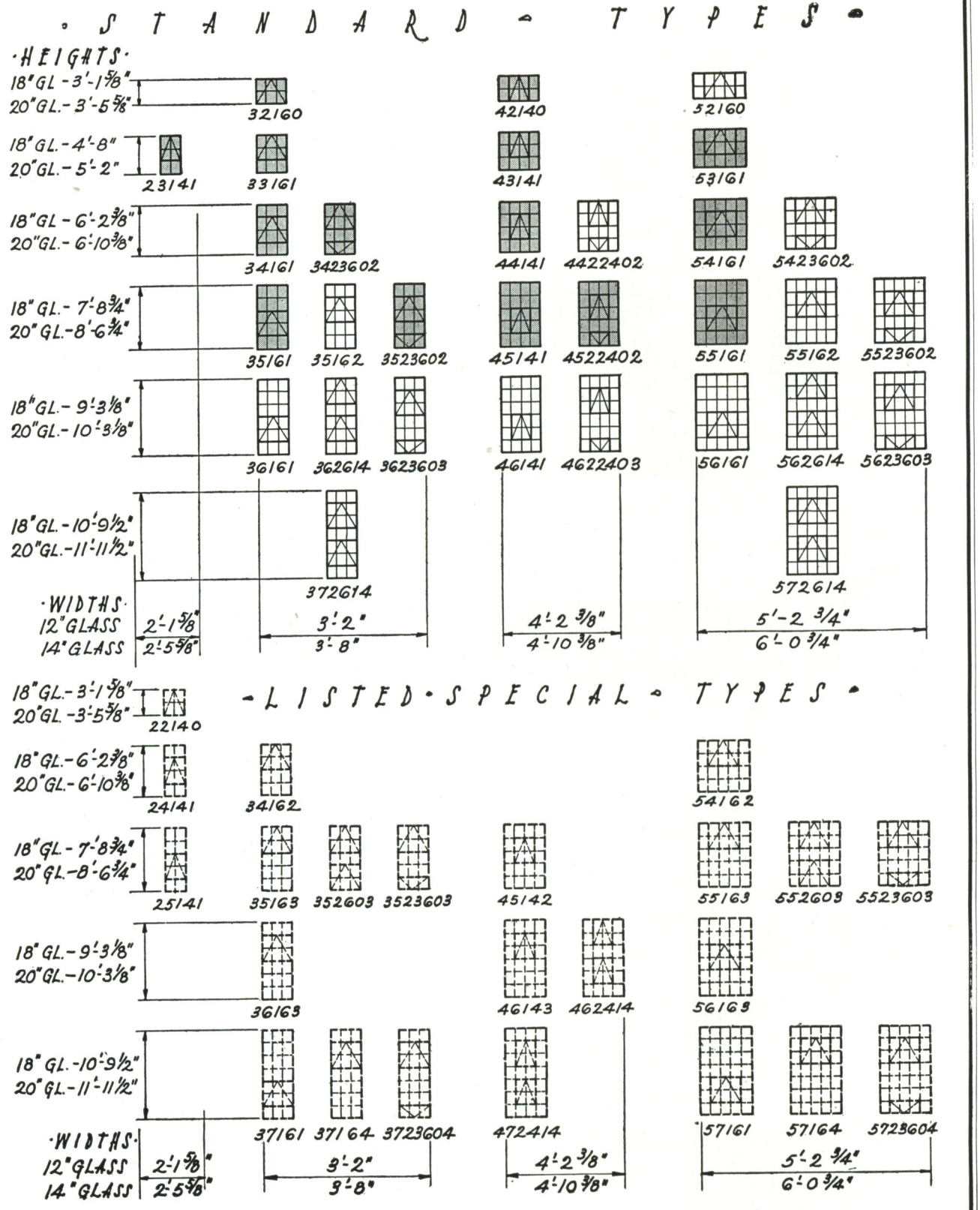


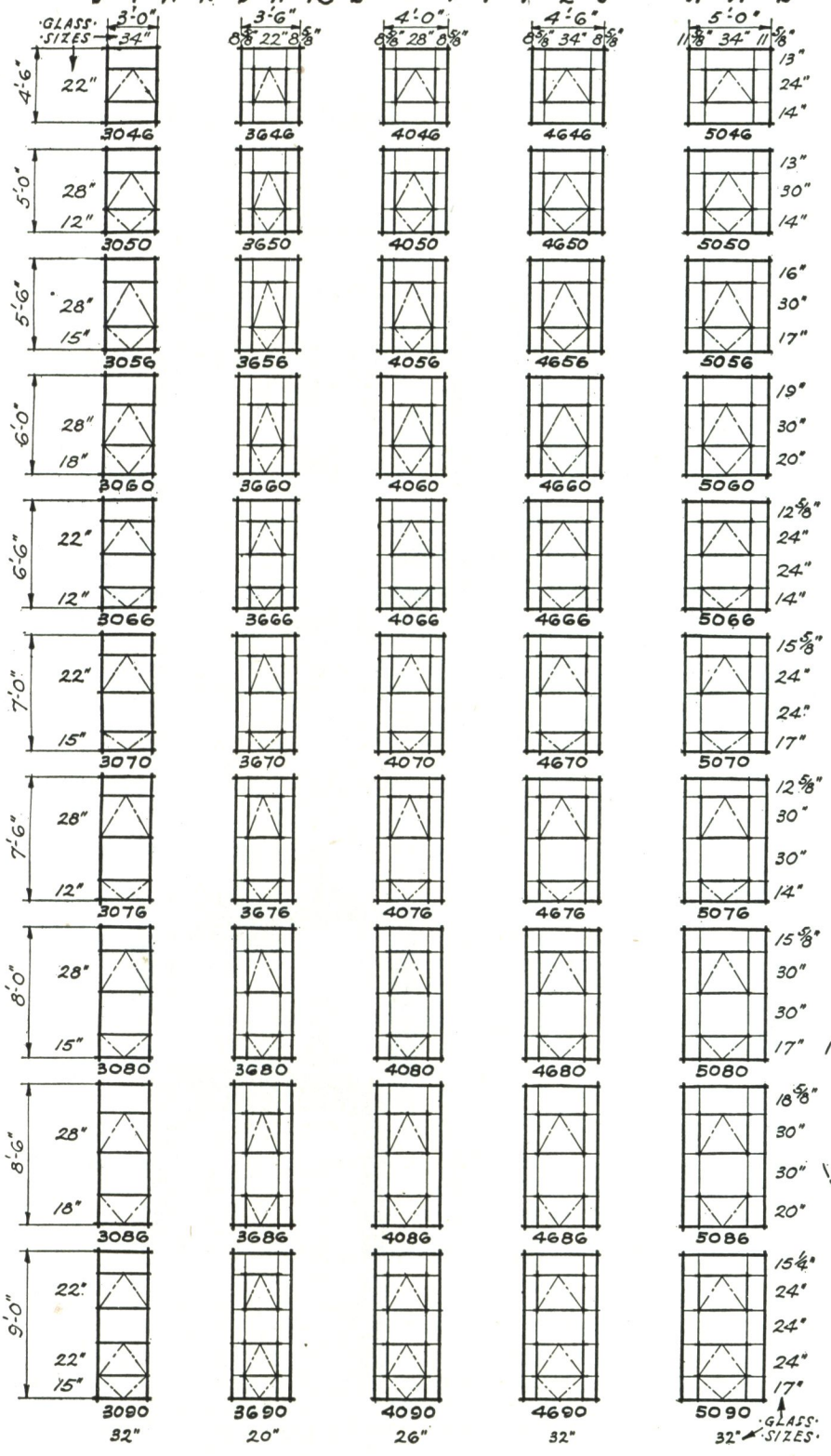
Fenestra
August 1929

Commercial Projected Windows
Types and Sizes

Plate No
G-301

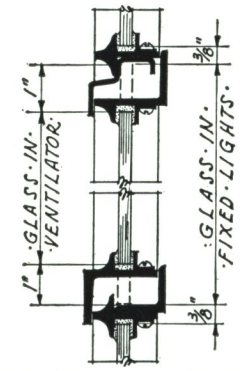
Continued on next page

• STANDARD • TYPES AND • SIZES •

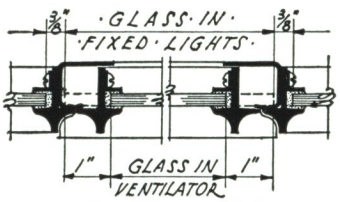


DIMENSIONS SHOWN ARE WINDOW & OPENING SIZES FOR SINGLE UNITS TWO OR MORE UNITS MAY BE COMBINED IN AN OPENING BY MEANS OF MULLIONS SEE DETAILS & TABLE ON PLATE - G-202

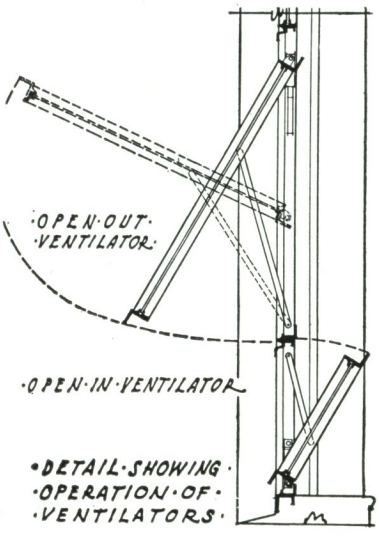
GLASS SIZES SHOWN ABOVE AND TO THE RIGHT OF TYPES ARE FOR FIXED LIGHTS. THOSE SHOWN BELOW AND TO THE LEFT OF TYPES ARE FOR VENTILATORS ONLY. SECTIONS BELOW SHOW RELATION OF GLASS IN FIXED AND VENTILATOR LIGHTS.



• VERTICAL SECTION •



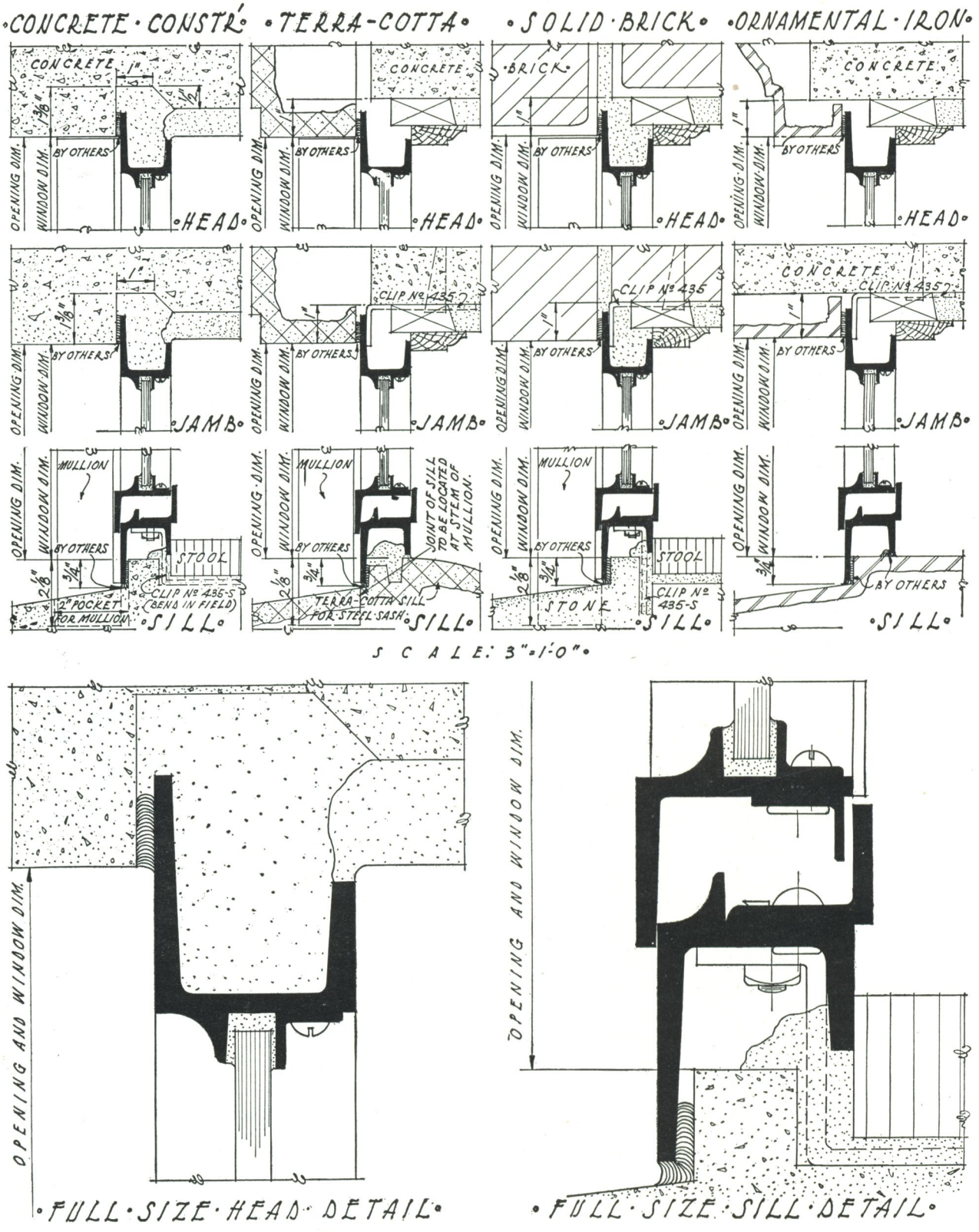
• HORIZONTAL SECTION •



• DETAIL SHOWING OPERATION OF VENTILATORS •

Fenestra, August 1929	Architectural Projected Windows Types and Sizes	Plate No G-201

Continued on next page



Fenestra, August 1929	Architectural Projected Windows Installation Details	Plate No G-203

Continued on next page

CONTINUOUS WINDOWS

SPECIFICATIONS

Notes are explanatory or advisory only and need not be included in the specifications.

(Note:—Intermediate structural vertical members should be provided approximately 8′ to 12′ apart.)

(Note:—Structural Steel Girts, at heads and sills of Continuous Windows, are not furnished by the window manufacturer, and should be provided for in the Structural Steel Specifications.)

(Note:—Sheet metal flashing at heads, sills, and ends of runs is not furnished by the window manufacturer, and should be provided for in the Roofing and Sheet Metal Specifications.)

GENERAL

CONTINUOUS TOP HUNG WINDOWS shall be *Fenestra* as manufactured by Detroit Steel Products Company.

(Note:—Fenestra Continuous Windows are particularly designed for use in monitor and sawtooth roof construction where the plane of the windows is on a slope. They may be used in vertical planes where necessary.)

(Note:—Standard units of Continuous Windows measure 20′ in length (dimension points equal the clear opening.) We recommend for the economical arrangement of operator arms that unnits vary on multiples of 4′ (8′, 12′, 16′). Smaller units may be used if necessary, in widths varying in multiples of 2′ (8′, 10′, 12′, 14′, 16′, 18′.)

MATERIAL

All sections shall be especially designed, hot rolled, solid steel bars with heavy fillets in all re-entrant angles. HEAD AND END JAMB MEMBERS shall be special angles. MUNTINS shall be special T's 1⅜″ deep.

SILLS shall be special design sections with a long downstanding leg bent at the end to make close contact with the building construction.

CONSTRUCTION

All members of the window shall be accurately fitted and rigidly riveted at the joints to form standard panel units. Panels shall be joined, end to end midway between T muntins, by splice plates bolted to head and sill members.

(Note:—Panels are joined at the time of erection.)

At the ends of all swing sections next the building construction there shall be provided stationary 1′ panels.

Between the ends of swing sections there shall be provided stationary 2′ panels.

The joint between ends of swing sections and stationary end sections (and stationary intermediate sections) shall be covered and protected by a specially formed, 14-gauge, steel channel with one leg secured to the end angle of the swing section and designed to overlap the end angle of the stationary section.

Where so indicated, provide 2′ wide storm panels secured to stationary end (and intermediate) panels by a steel plate and to the sill by sill clips. Panels shall underlap the swing window section and shall be provided at sill with a formed continuous drip board, set over the sill flashing.

ATTACHED HARDWARE

(Note:—Attach at the factory.)

All CONTINUOUS WINDOWS shall be top hung on heavy malleable iron butts, with ⅜″ brass pins, spaced 4′ apart on centers. Butts shall be rigidly riveted to the head angle and furnished with bolts for attachment to the building girts.

ERECTION

All CONTINUOUS WINDOWS shall be erected by the Fenestra Construction Company, under a separate contract.

All windows shall be erected in a thoroughly workmanlike manner ready for glazing.

PAINTING

All windows shall be given one dip-coat of red mineral paint by the manufacturer before shipment.

(Note:—The following should be provided for in the Painting Specifications:

"One additional coat of paint should be applied after erection but before glazing. Further painting should be deferred until at least three weeks after glazing to allow putty to set. One or more additional coats may then be applied as required.")

(Note:—Where desired, the Fenestra Construction Company at reasonable added cost will do field painting after erection. If required, so specify here, including specification for paint and its application.)

GLASS AND GLAZING

Glass shall be ¼″ rough wire glass.

Putty shall be a high grade of steel window putty.

(Note:—Ordinary wood sash putty must not be used.)

All CONTINUOUS WINDOWS shall be glazed from the outside. All glass shall be set in a heavy bed of putty and secured at muntins and end angles by angle clips secured with bolts. Face putty shall be applied at sills in a neat, clean-cut, smooth manner.

(Note:—Do not paint until putty has thoroughly hardened.)

CONTINUOUS FIXED WINDOWS

(Note:—The Specification for Continuous Fixed Windows is the same as that for Continuous Top Hung Windows except that all window units are stationary (no swing sections). Heavy steel angle clips bolted to the window head and the building girts are substituted for the butts. Steel sill clips, furnished with the window and shipped flat, are bolted to the sill of the window and bent around the steel sill girt to rigidly secure the window in position at the bottom.)

CONTINUOUS BOTTOM HUNG WINDOWS

(Note:—In general the specification for Continuous Bottom Hung Windows is the same as that for Continuous Top Hung Windows except in the following particulars:

[a] The head section is a special T.

[b] The sill section is a special angle designed to take the butts attached to a special girt.

[c] The weathering caps are attached, with the legs out, to the fixed end or intermediate panels instead of to the swing sections.

[d] The windows are glazed on the inside with face putty at both head and sill.)

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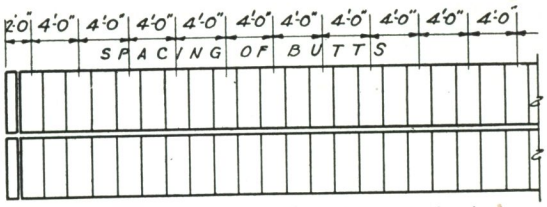
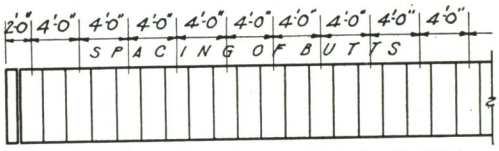


ELEVATION-DOUBLE RUN



ELEVATION-SINGLE RUN

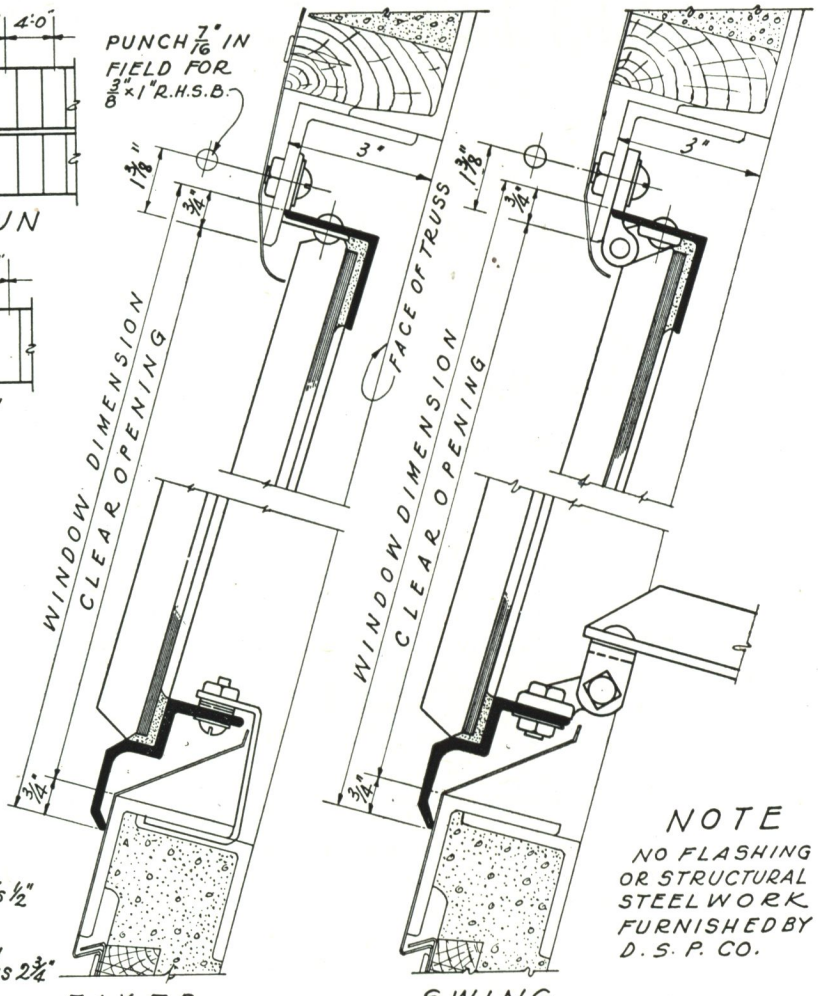
WINDOW HEIGHT	GLASS WIDTH	GLASS HEIGHT
3'-0"	23 1/2"	2'-9 1/4"
4'-0"	23 1/2"	3'-9 1/4"
5'-0"	23 1/2"	4'-9 1/4"
6'-0"	23 1/2"	5'-9 1/4"

TABLE OF WINDOW DIMENSIONS AND CLEAR OPENINGS.	
WINDOW-O.	CLEAR O.
3'-0"	2'-10 1/2"
4'-0"	3'-10 1/2"
5'-0"	4'-10 1/2"
6'-0"	5'-10 1/2"

GLASS SIZES

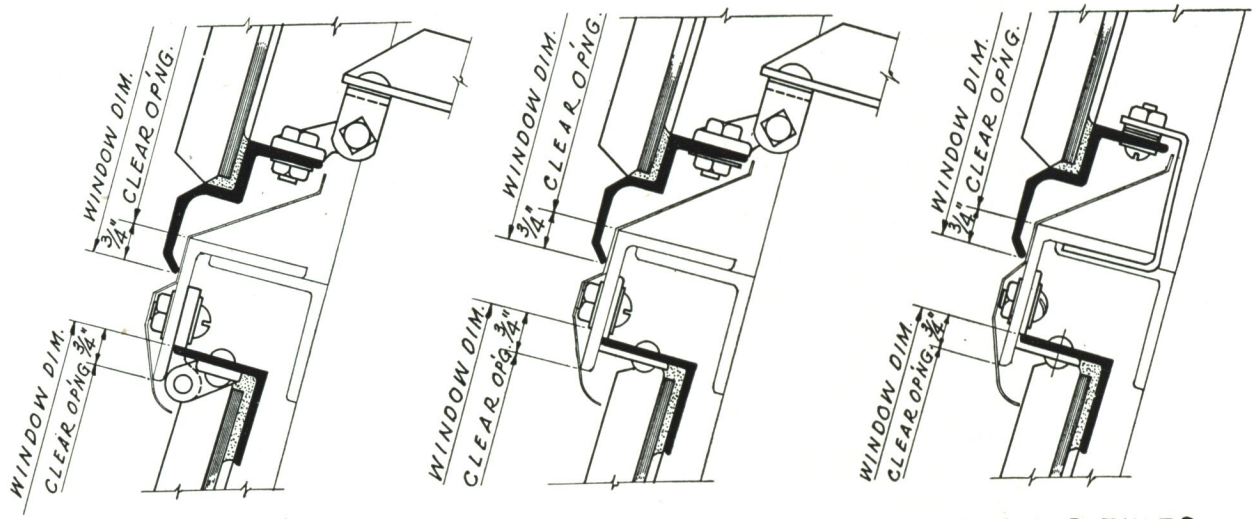
WIDTH
EQUALS BAR CENTERS MINUS 1/2"

HEIGHT
EQUALS SASH DIMENSION MINUS 2 3/4"



FIXED SWING

NOTE
NO FLASHING OR STRUCTURAL STEEL WORK FURNISHED BY D.S.P. CO.



SWING OVER SWING SWING OVER FIXED FIXED OVER FIXED

SCALE: 3"=1'-0"

Fenestra *August 1929*

Continuous Windows, Top Hung
Typical Cross Sections

Plate No *P-102*

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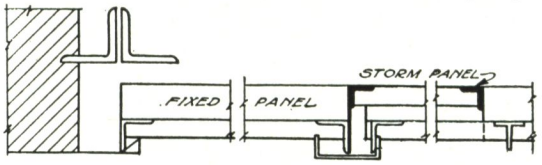
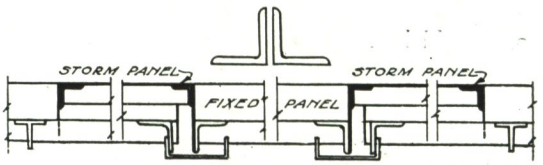
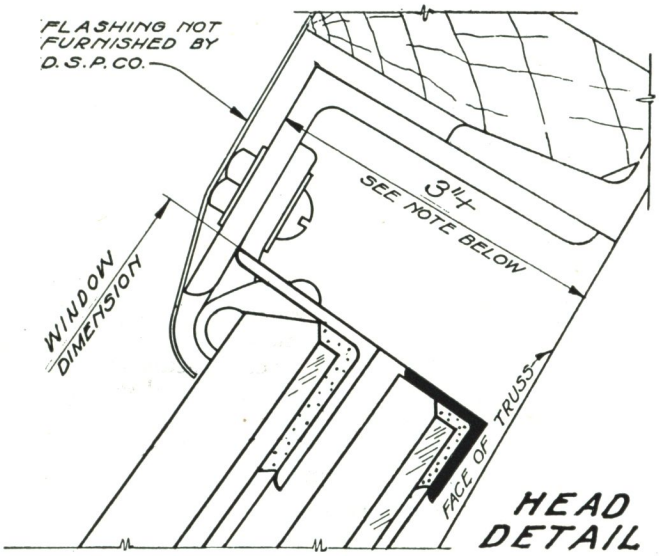


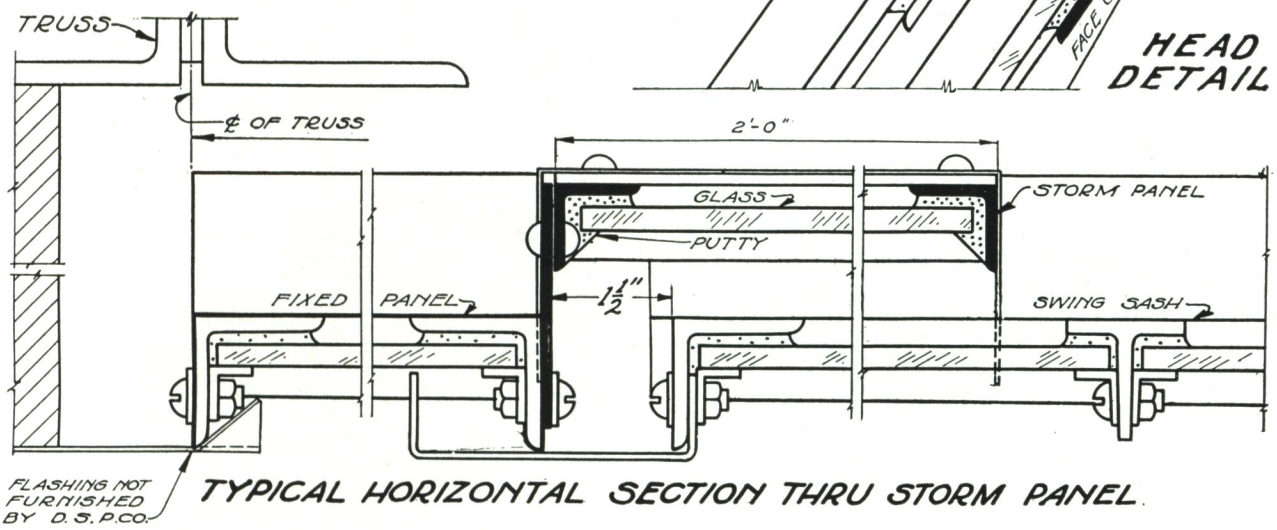
TYPICAL DETAIL AT END OF SWING RUN



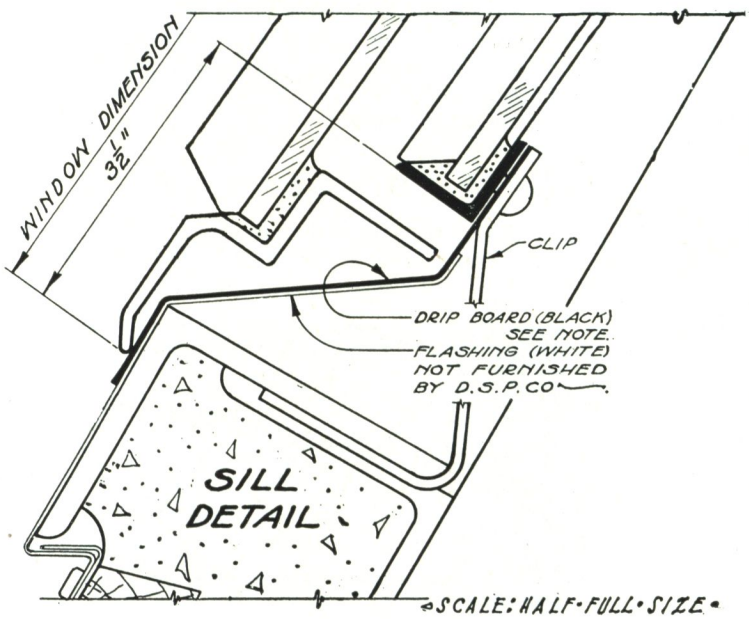
TYPICAL DETAIL BETWEEN SWING RUNS



HEAD DETAIL



TYPICAL HORIZONTAL SECTION THRU STORM PANEL



NOTE

Storm panels can be used only with top hung windows. They are recommended only for windows 30° or less off the vertical.

When panels are used in front of vertical steel members or diagonal bracing a clear distance of not under 4 in. must be used.

A drip board (shown in black at sill) is furnished as part of panel. This drip should not be confused with flashing at sill which is not furnished by Detroit Steel Products Company.

The height of glass in panel is equal to window dimension minus 4 in. The glass width is 1 ft. 11½ in.

Fenestra, August 1929	Continuous Windows, Top Hung Storm and End Panels	Plate No P-104

Continued on next page

FENESTRA OPERATING DEVICES

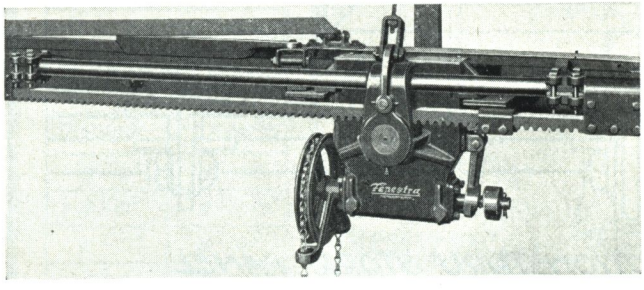
SO many different conditions are encountered in designing Fenestra operators that the following descriptions and limits should be regarded as explanatory and advisory only.

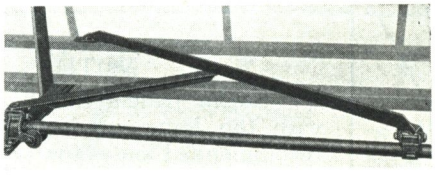
Fenestra operators are not sold as separate products but only as methods of mechanically opening and closing Fenestra windows. All Fenestra operators are erected by our own erection department, the Fenestra Construction Company, which supplies the necessary support brackets for both power and transmission lines, lines the operator plumb and true and leaves it in good working order.

All operating equipment, especially electrically controlled equipment, needs occasional inspection and lubrication. Provision should be made for reaching powers or motors without undue inconvenience.

CONTINUOUS OPERATOR

Designed to operate one or several continuous windows in line (top hung or bottom hung) in either vertical or sloping planes. Unusually heavy construction and extreme care in assembly give this operator unusual strength and reliability. The power is applied through straight line motion levers. Since the leverage increases faster than the load, the operation becomes continuously easier as the windows open. This is an exclusive Fenestra principle.



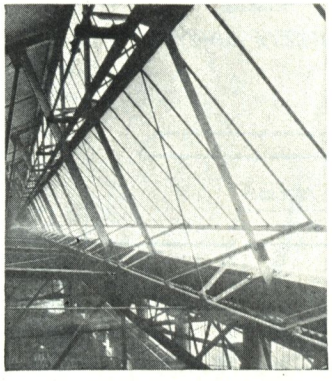


Above—The Fenestra Continuous Power. Right—Continuous Lever Arm Assembly

Power is a case-hardened, machine cut, high carbon steel worm operating a special alloy, non-ferrous bronze worm gear with straight face, machine cut teeth and extra heavy hub and rim. Worm and worm shaft are turned down from a solid steel bar. Worm and gear are oil encased in an oil-tight box. Worm shaft is provided with ball thrust bearing.

Worm gear fits over a 1″ square steel shaft which drives a high carbon steel, heat-treated pinion in mesh with high carbon steel rack, carrying machine cut teeth. Worm gear and pinion are broached out to fit the shaft with the permanence and reliability of a single piece. Rack is suspended from hangers rigidly clamped to the transmission line, thus transmitting power in a horizontal direction. A steel stop clutch, rigidly attached to the worm shaft, operates to cut off the power as the window is closed.

Power transmission line is 1″ wrought iron pipe in 20′ lengths joined by solid steel plugs with a drive fit riveted in two directions. Operating arms are steel angles,



Continuous Operator on a Run of Continuous Top Hung Sash

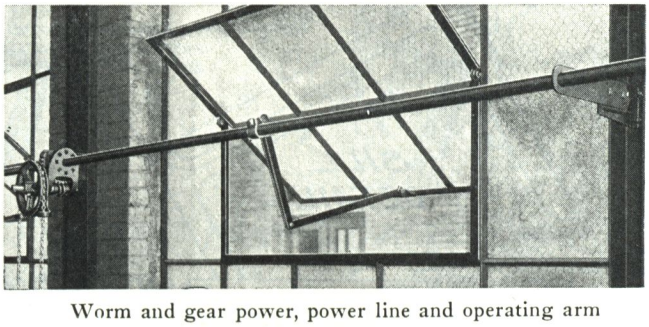
one arm twice as long as the other. One end of the short arm is pivoted to the center of the long arm, the other end attached by a universal pivot to a housing on the operator support. One end of the long arm is attached to the window and the other end is clamped through a universal joint to the transmission line. Operating arms are spaced approximately 10′ on centers.

Power is operated: (a) By chain and chain wheel, the hub of the latter being broached to fit the flattened end of the worm shaft and secured by a set screw and cotter pin. (b) By electrical power unit operating through a sprocket and chain as in Rack and Pinion operator.

Power may be located near either end of the run, not closer than 20′ to the end. For limits of operation see a Fenestra representative, as numerous factors such as arrangement of windows, their height and the degree of opening, must be considered.

WORM AND GEAR OPERATOR

Designed for ventilators horizontally pivoted 2″ above center. May be used with top pivoted ventilators. Power consists of a machine cut, cast iron worm, equipped



Worm and gear power, power line and operating arm

with ball thrust bearings, operating a cast iron segmental worm gear assembled in a steel housing. Hub of the gear reamed to fit power transmission line and rotate it on the gear axis. Power line is of 1″ black wrought iron pipe

Continued on next page

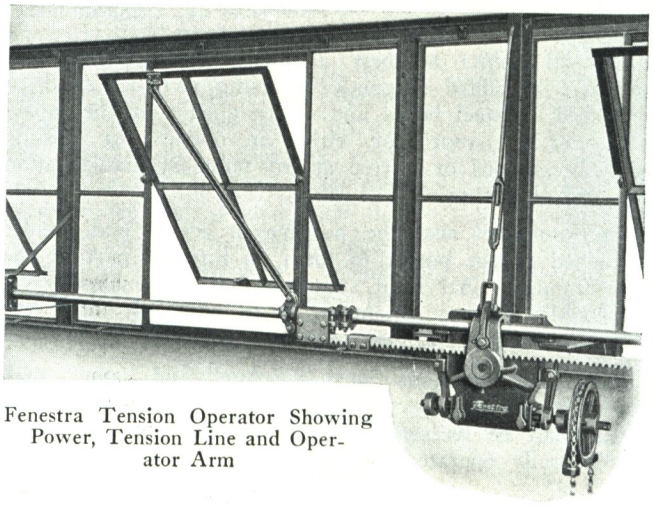
made continuous by steel plugs with a drive fit in two directions. Adjustable steel operating arms are rigidly clamped to the transmission line and attached to the ventilators by steel brackets.

Power is operated: (a) By a chain passing over a chain wheel which is broached to accurately fit the flattened end of the worm shaft and secured by a set screw and cotter pin. (b) By a 1″ black wrought iron pipe connected to the worm shaft and carried down vertically to a miter gear (with removable crank) encased in a gear box.

Power may be vertical or inclined, located at either end or at any intermediate point. Operator limited to 12 single 2-pane high vents in a single run and 40′ on either side of the power. Multiple runs limited to 9 single 2-pane high vents and 20′ on either side of the power. Miter gears limited to 9 single 2-pane high vents each.

TENSION OPERATOR

Designed to operate long runs of horizontally pivoted ventilators. In general construction and design Tension operator is similar to Continuous operator. Power and transmission lines are the same, except that each power is equipped with a double stop so that all movement is



Fenestra Tension Operator Showing Power, Tension Line and Operator Arm

stopped and power cut off both when the vents are closed and when they are fully open.

Operating arms are adjustable, straight, steel channels rigidly attached to the tension line by malleable iron and steel swivel clamps. Arms attach to the vents by steel pivot hinges.

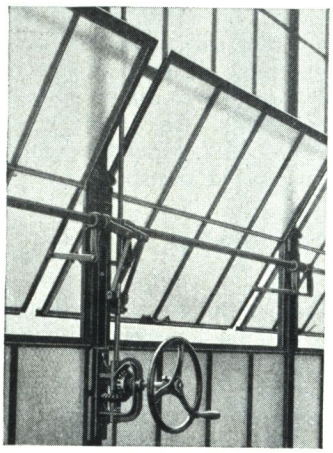
Power may be attached at either end of the run not closer to the end than 20′. Operator limited (single power) to 300′.

SCREW TYPE OPERATOR

Designed for use in high openings, such as power house bays, filled entirely with windows and structural mullions. May be used with ventilators pivoted 2″ above center or 4″ down from the top. Lies close to the windows, out of the way of cranes. May be concealed in the walls, if desired, at extra cost.

Two types of power are available: (a) Open bevel gears, manually operated by a hand wheel. Power to be assembled in an open cast iron case. (b) Electrical power with gears assembled and oil encased in a dust-proof gear box. Power to be connected either directly through a universal joint or by sprocket and chain drive.

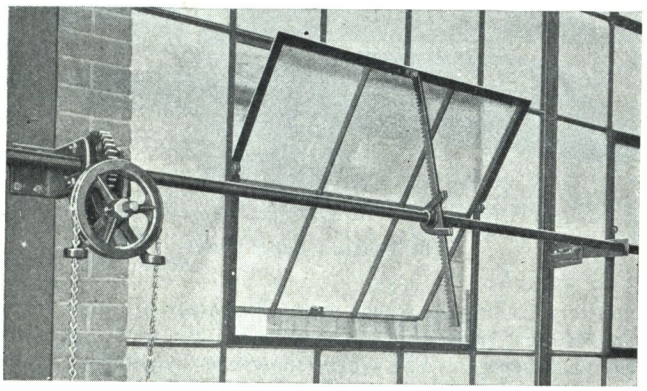
Either power operates a ¾″ vertical, threaded steel shaft upward or downward. To this shaft are connected heavy, cast iron cross heads, which operate cast iron rocker arms, which in turn are connected to the transmission line. Transmission line is 1″ wrought iron pipe with drive fitted steel plugs and rotates to operate pivoted lever arms (two to each vent), which connect with the ventilator jamb bars. Power may be located at either end of the run or at any intermediate point. Operator limited (single power) to 20 2-pane high vents pivoted 4″ from top or 50 2-pane high vents pivoted 2″ above center. One row of fixed lights at the sill of the window usually is required to permit clearance of power.



Screw Type Operator

RACK AND PINION OPERATOR

Designed for ventilators pivoted 4″ from the top or with vents pivoted 2″ above center. Three types of power are available: (a) Light power: 32 to 1 reduction. Cut steel worm equipped with ball thrust bearings, operating a cast iron worm gear assembled in a steel housing. (b) Heavy power: 45 to 1 reduction. Machine cut steel worm equipped with ball thrust



Rack and Pinion Operation of Pivoted Ventilators

bearings operating a semi-steel worm gear assembled and oil encased in a dust-proof gear box. (c) Electrical power: 71 to 1 reduction. Machine cut steel worm equipped with ball thrust bearings operating a semi-steel worm gear assembled and oil encased in a dust-proof gear box.

Power line is 1″ wrought iron pipe to which pinions are rigidly attached. Operating arms are straight steel

Continued on next page

racks attached to vents and clamped in mesh with the pinions.

Light and heavy powers may be operated (a) by chain and chain wheel or (b) by crank and miter gear (similar to worm and gear operators). Electrical power is operated by a cast iron sprocket wheel keyed to the worm shaft and motor driven through a chain drive. The electrical equipment is mounted directly beneath and joined to the power gear case forming one complete power unit.

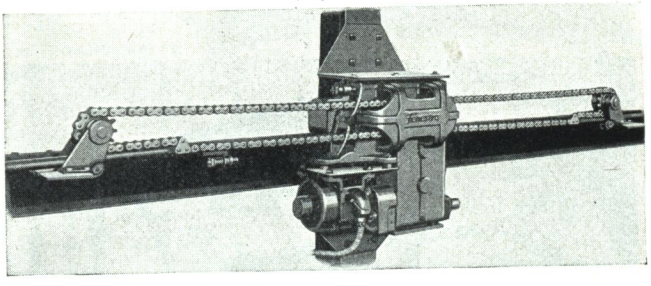
Power may be either vertical or inclined, located at either end of the run or at any intermediate point. Light and heavy operators in single runs limited to 80′ and 12 horizontally pivoted vents on either side or 40′ and 6 top pivoted vents on either side. Double runs limited to half that of single runs. Electrical powers in single runs limited to 300′ for horizontally pivoted vents or 150′ for top pivoted vents. In double runs, electrical powers are limited to 150′ for horizontally pivoted vents and 75′ for top pivoted vents.

SUPER-POWER OPERATOR

For exceptionally large industrial buildings where unusual operating service is desired on long runs of continuous top hung windows, we are prepared to supply the Fenestra super-power which, in connection with continuous operator transmission line and lever arms, will handle conveniently top hung continuous windows in runs up to 600′.

The utmost care has been used both in workmanship and materials to produce a device that combines smooth, even, efficient action with superlative strength and durability.

The power consists of a heavy, double, spur gear reduction of especially heat-treated alloy steel and a case-hardened steel worm engaging a heavy, special alloy,



The Fenestra Super-power

non-ferrous bronze worm gear. Shafts for all spur gears are of heat-treated alloy steel with generously proportioned bearings. The worm shaft has, in addition, combination radial and thrust bearings of ball bearing type. The entire mechanism is enclosed in an accurately machined oil-tight case.

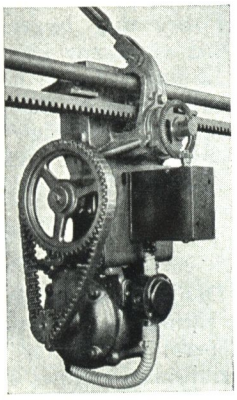
The power is usually located in the center of the run, operating a transmission line on either side through a heavy, continuous, roller type, chain drive. The motor is direct connected to the power by means of spur gears.

Conditions demanding the use of this super equipment are unusual. We strongly recommend consultation with Fenestra engineers who will be glad to make suggestions without obligation.

ELECTRICAL EQUIPMENT

The following specifications cover the electrical equipment for Fenestra operating devices:

All mechanical operators, electrically controlled, shall be provided by the operator manufacturer, with complete electrical equipment, as hereinafter specified. The operator manufacturer shall provide complete wiring diagrams.



Continuous Power Electrically Controlled

Motors shall be of type best adapted to the power equipment, of high torque and ample horsepower.

(Note:—Motors operating on 220-volt or 440-volt, 60-cycle, 3-phase, alternating current are recommended. Direct current motors are not carried in stock, but if alternating current is not available a special motor for 230-volt, direct current, can be supplied.)

(Note:—Specify current furnished.)

Motors shall be connected to power by means of sprockets and chains, or direct connected through universal joints as best adapted to power requirements. Standard magnetic reversing switches shall be enclosed in steel boxes and so designed that the movement of the ventilator, either in opening or closing, may be stopped or started at any point by manipulation of push buttons.

Limit switches shall be positive in action and rigidly attached to the power to form an integral part of the power unit. All limit switches shall be enclosed, yet accessible for adjustment so as to positively limit the motion of the ventilator in either direction.

Push button stations "open," "close" and "stop" shall be of rugged construction to withstand hard usage. Buttons shall be recessed in cover so that they cannot be accidentally operated.

(Note:—The following provisions should be made in the Electrical Specifications:

The electrical contractor shall install magnetic reversing switches and push button stations and shall furnish and install safety type line switches. He shall also furnish all conduit, fittings and wire and do all wiring in accordance with the wiring diagram between the electrical equipment furnished by the window operator manufacturer and that furnished by himself.

All materials and workmanship shall meet the requirements of the National Electric Code and all Local and State Inspection Bureaus.

Conduit shall be galvanized or black enameled. Wire shall be rubber covered N. E. C. Exposed conduit shall be run in a systematic, sightly manner, parallel with structural features of the building and rigidly and neatly secured. Where walls are plastered, conduit shall be concealed.

The electrical contractor shall carry fire, workmen's compensation, and public liability insurance. He shall guarantee his work for a period of one year after completion. Defect in the work and material furnished by him, developing during the above named period, shall be promptly and satisfactorily made good at his expense.)

Continued on next page

AIRPLANE HANGAR DOORS

SPECIFICATIONS

(Note:—Practical limits are determined largely by shipping facilities, height of tunnels, width of bridges, etc.)

GENERAL

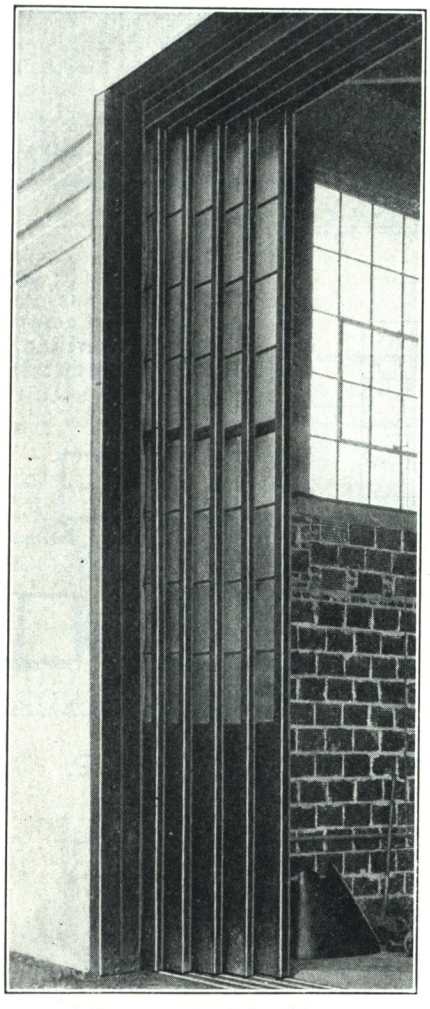
All doors shall be Fenestra Airplane Hangar Doors as manufactured by the Detroit Steel Products Company.

MATERIAL

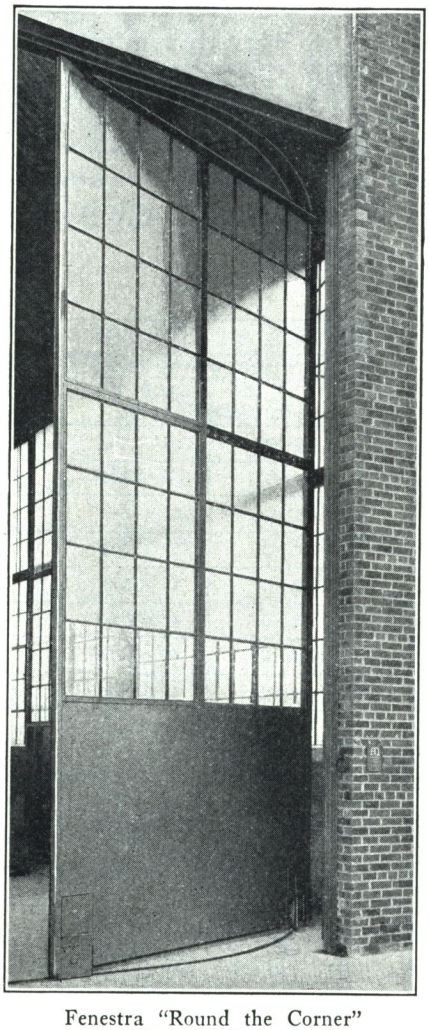
(Note:—All framing to be included with the Miscellaneous Structural Steel or Ornamental Iron or under other specification divisions.)

Upper part of doors shall be provided with glass panels constructed of solid rolled steel frame sections and muntin bars of 1⅜" depth. Lower panels shall consist of solid 13-gauge steel plates.

All door stiles and rails shall be made of (2½"x2½") (3"x3½") (4"x 2½") steel tubing. Rails shall be solidly welded to stiles at all junctions. Weathering between doors on adjacent tracks shall consist of rubber strips, secured by continuous metal retainers to the stile of one door, making contact weathering against the stile of adjacent door. Weathering between doors on the same track shall be of steel.



Fenestra "Straight Side" Hangar Doors



Fenestra "Round the Corner" Hangar Doors

CONSTRUCTION

Frames of glass panels shall be mortise and tenon, air hammer riveted, and welded at all corners. Muntins shall be continuous from bottom to top and from side to side, so interlocked at intersections as to increase the rigidity and strength—joints at frames shall be mortise and tenon, air hammer riveted. Solid panels shall be secured to tube frame.

(Note:—Where glazing angles are specified all glass shall be secured with glazing angles mitered at corners. Angles shall be secured with machine screws tapped to frame, and with machine screws and nuts to muntins.)

All doors shall rest on double flanged, malleable iron wheels so designed as to roll on steel tracks carrying the entire weight of the doors. Each wheel shall be mounted by housings and plates, and equipped with roller or swivel ball bearings and Alemite lubricated.

Bronze bushed malleable iron rollers shall be attached to the head rail of each door, to serve as guides and reduce friction, and minimize the transverse load on structural steel members.

(Note:—Hinged pilot doors supplied as specified.)

Unless otherwise specified a swing door, to fold back against the wall, will be furnished at each end of the door opening, to provide track clearance for curved track type doors.

ATTACHED HARDWARE

Suitable locking hardware, such as friction bolts, cremone bolts, etc., shall be supplied for each door.

ERECTION

All doors shall be erected by the Fenestra Construction Company under a separate contract.

PAINTING—GLAZING

(Note:—Same as Painting and Glazing Specifications for Horizontally Pivoted Windows.)

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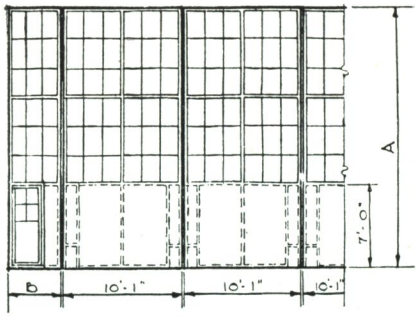
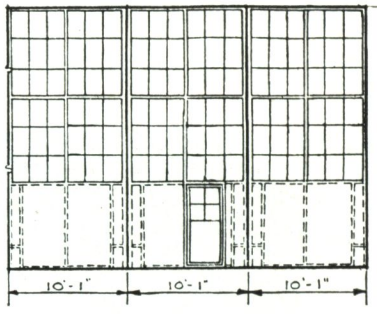
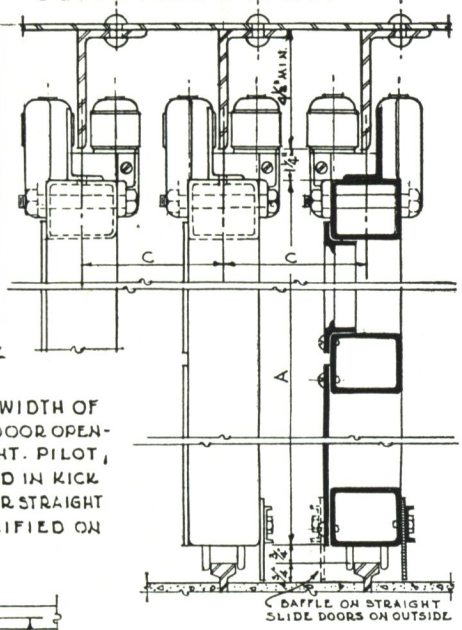
TYPES AND SIZES ~ DETAILS OF CONSTRUCTION



TYPICAL ROUND THE CORNER



TYPICAL STRAIGHT SLIDE

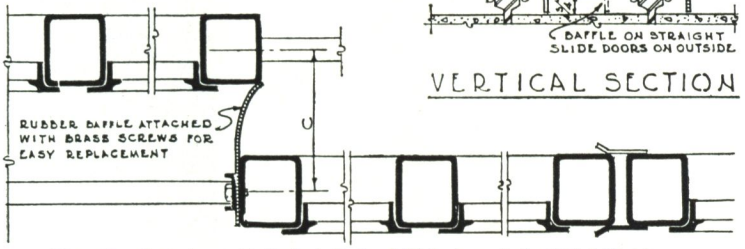


VERTICAL SECTION

NOTE

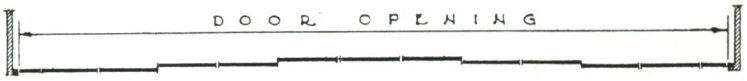
FOR DIMENSION "B" - WIDTH OF END SWING DOORS - SEE DOOR OPENING TABLE AT LOWER RIGHT. PILOT DOORS WILL BE FURNISHED IN KICK PLATE OF ANY END SWING OR STRAIGHT SLIDE DOOR WHEN SPECIFIED ON ORDER.

TABLE OF STANDARD SIZES		
ALL ROLLING DOORS ARE 10'1" WIDE.		
HEIGHT OF DOOR (DIM."A")	SIZE OF TUBE	TRACK SPACING DIM."C"
16'-0"	2½" x 2½"	5¼"
18'-0"	2½" x 2½"	5¼"
18'-0"	3" x 2½"	6"
20'-0"	3" x 2½"	6"
22'-0"	3" x 2½"	6"
22'-0"	4" x 2½"	7"
25'-0"	4" x 2½"	7"
28'-0"	4" x 2½"	7"

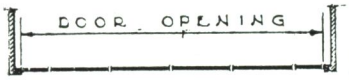


TYPICAL HORIZONTAL SECTION.

TYPICAL DOOR OPENINGS

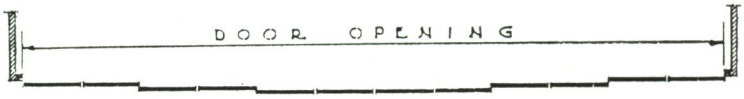


MULTIPLE TRACK SYSTEM



ROUND THE CORNER DOORS

SINGLE TRACK SYSTEM



OUTSIDE SLIDING ~ SHOWING TWO DOORS PER TRACK

INSIDE SLIDING ~ SHOWING ONE DOOR PER TRACK

PATENTS PENDING

	DOOR OPENING	NO. OF 10'-1" ROLLING DOORS	NO. OF TRACKS	DIM."B" END SWING DOOR 2 REQ'D.
ROUND THE CORNER DOORS	50'-0"	4	1	4'-8"
	60'-0"	5	1	4'-8"
	70'-0"	6	2	4'-8"
	80'-0"	7	2	4'-8"
	80'-0"	7	1	4'-6"
	90'-0"	8	2	4'-8"
	90'-0"	8	1	4'-6"
	100'-0"	9	2	4'-8"
	100'-0"	9	1	4'-6"
	110'-0"	10	2	4'-6"
	120'-0"	11	3	4'-6"
	130'-0"	12	3	4'-6"
	140'-0"	13	3	4'-6"
	150'-0"	14	3	4'-6"
	160'-0"	15	3	4'-6"

	DOOR OPENING	NO. OF DOORS IN OPENING	NO. OF TRACKS	DOORS PER TRACK
STRAIGHT SLIDE DOORS	50'-0"	5	3	1
	60'-0"	6	3	1
	70'-0"	7	4	1
	80'-0"	8	2	2
	80'-0"	8	4	1
	90'-0"	9	3	2
	90'-0"	9	5	1
	100'-0"	10	3	2
	100'-0"	10	5	1
	110'-0"	11	3	2
	120'-0"	12	3	2
	130'-0"	13	4	2
	140'-0"	14	4	2
	150'-0"	15	4	2
	160'-0"	16	4	2

Fenestra
August 1929

Airplane Hangar Doors
Types and Sizes

Plate No
Y-122

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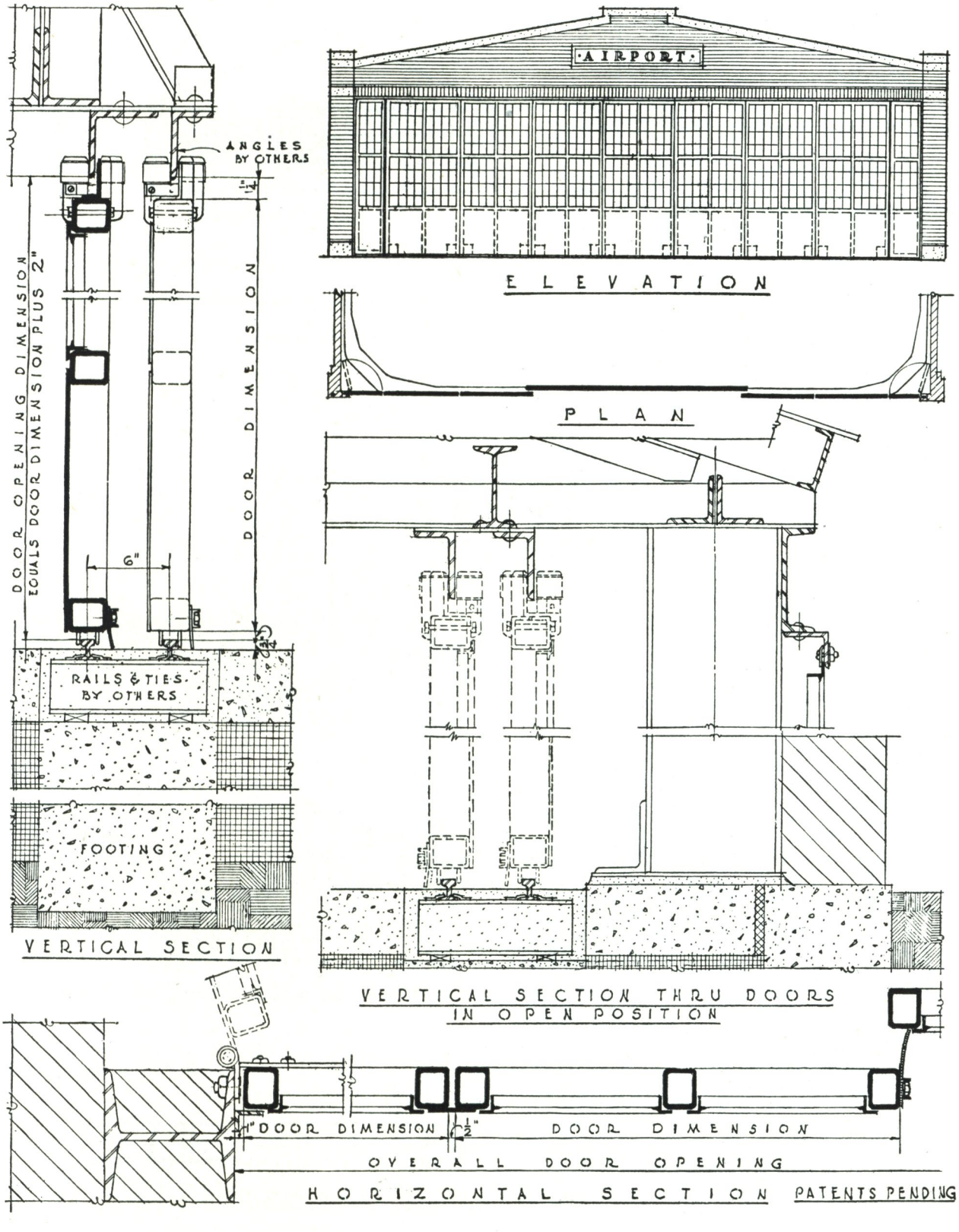

Fenestra *August 1929*	*Airplane Hangar Doors* *Span Truss Construction*	**Plate No** *Y-124*

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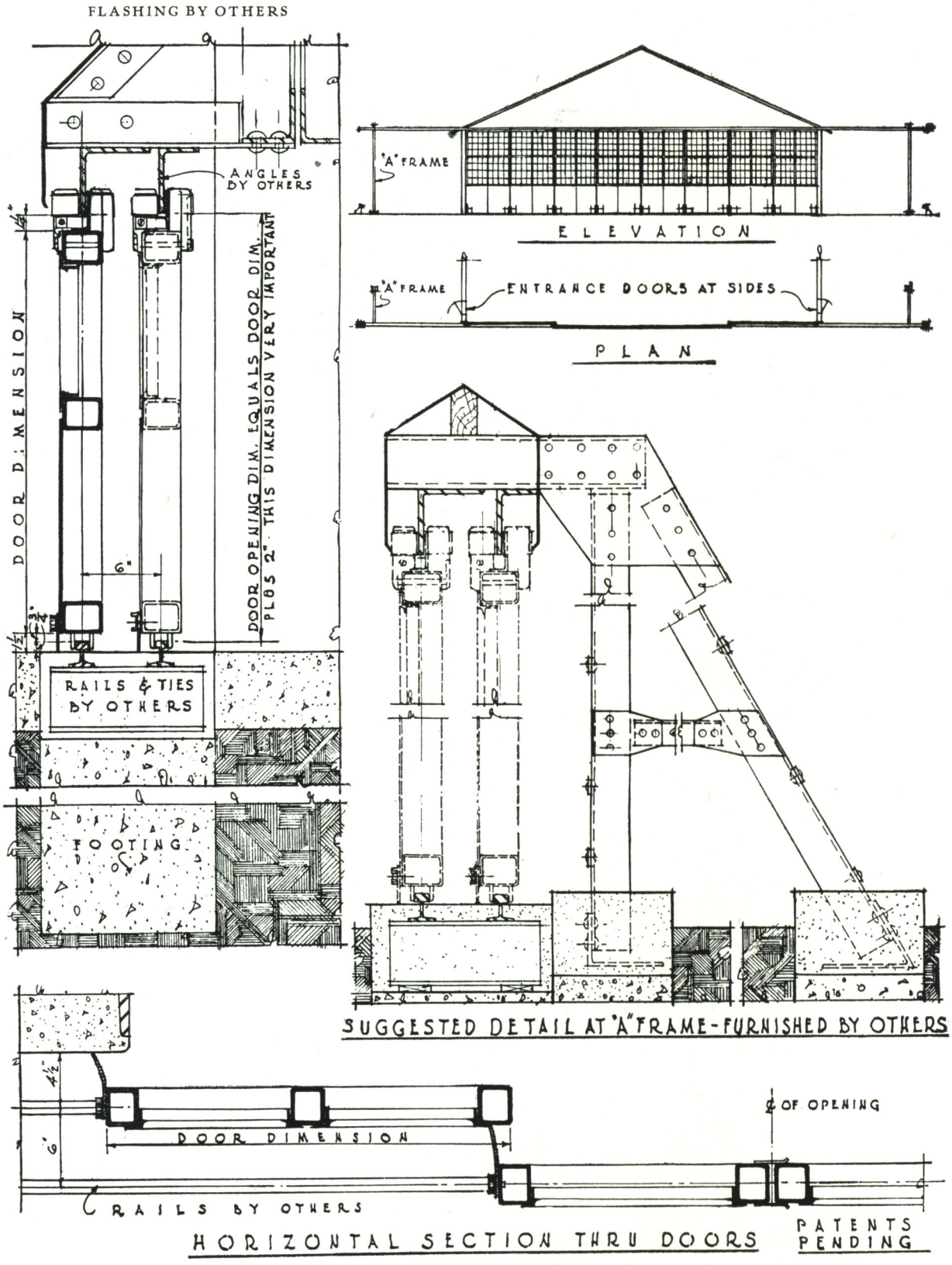


Fenestra *August 1929*

Airplane Hangar Doors
A-Frame Construction

Plate No *Y-125*

Continued on next page

FENESTRA ROLLED STEEL DOORS

Fenestra Rolled Steel Doors are designed in types which swing, slide, fold, roll, lift or pivot. They may be operated either manually or electrically.

Doors designed especially for airplane hangars are shown on preceding pages. Industrial and commercial doors shown here are intended for use in warehouses, mills, garages, round houses, car shops, power houses, piers, freight depots, fire stations, factories, grain elevators, police stations and similar structures.

In addition to standard type doors, Fenestra engineers are equipped to solve almost any kind of unusual door problem. Where openings of unusual size are encountered, or peculiar methods of operation are necessary Fenestra engineers will be glad to make suggestions and layouts without cost or obligation.

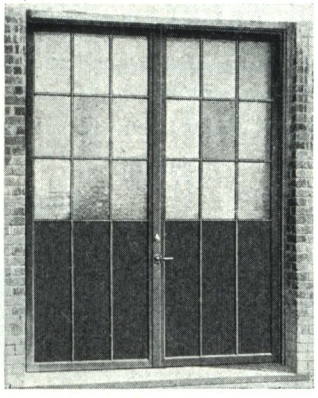
As the oldest and largest manufacturer of steel windows in America, Detroit Steel Products Company has a reputation for quality material and accurate assembly. The same precision methods used in the manufacture of Fenestra doors insures durability and satisfaction, even under the hardest usage.

Since door frames, in all cases, should be installed when the building is erected to insure proper anchorage, while the doors themselves should be installed after the building is completed, we strongly recommend that door frames be included in the Structural Steel or Ornamental Iron Specifications, including slotted sliding door thresholds and track supports where required. Frames should be made to the exact dimensions given by the door manufacturer and erected plumb and true.

Where particularly desired, 4″ channel frames for swing doors only, will be furnished with the doors at added cost.

INDUSTRIAL DOORS

Single Swing Door



Double Swing Doors

Fenestra Industrial Doors are manufactured in both tubular and channel types, single or double units, to either slide or swing. Stiles and rails are heavy rectangular tubing or heavy rolled steel channels as specified. Intermediate sections are specially designed, solid rolled steel. Panel frame members are equal leg channels or angles. Solid panels are 13-gauge steel. Closures, guides and meeting rail astragals are heavy steel plates.

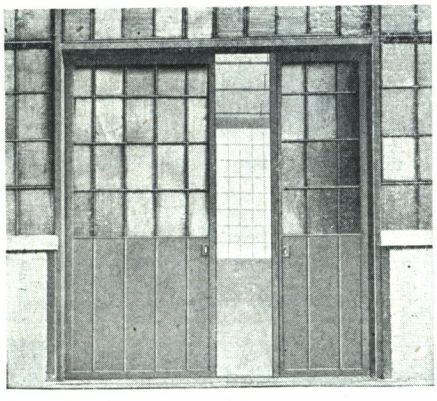
Tubular stiles and rails are mitered and welded at corners. Panel frames are attached by countersunk machine screws. Channel stiles and rails are butted together over solid corner castings, through-riveted and riveted also to the panel frames. Stiles are reinforced at the butts by heavy steel plates.

Panel frames are assembled in a manner similar to fixed industrial windows.

Glass is set in putty and secured by mitered glazing angles attached to the frames by machine screws. Where necessary, stiles are tapped to receive hardware which is applied at time of erection.

Swinging tubular doors are equipped with 6″ x 4½″ butts; channel doors with 4½″ x 4½″ butts. Both types have nonrising, loose butt pins.

All swinging single doors are equipped with standard, bronze faced, mortise cylinder locks, or Japanned iron Tee latches and strikes. Both single and double swinging doors are equipped with malleable iron or bronze handles and bronze faced cylinders and escutcheons. Inactive leaves of double swinging doors have standard top and bottom steel shot bolts, top bolt chain operated.



Double Sliding Doors

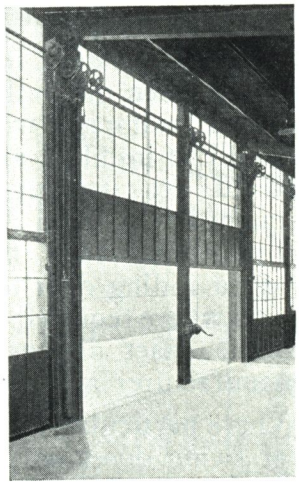
Sliding doors are equipped with combination flush and projecting iron handles, one to each door, solidly riveted to the panels; also hinged hasps and staples. They hang from standard steel tracks on adjustable roller bearing trucks and track brackets.

Special hardware such as master keyed locks, standard fire exit panic bolts, door checks, etc., may be had at extra cost, if specified in advance.

Continued on next page

FENESTRA VERTICAL LIFT DOORS

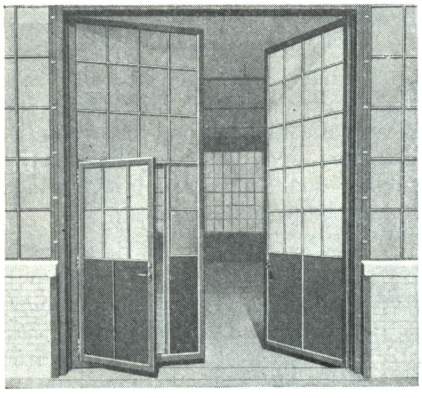
Fenestra Vertical Lift Doors are used chiefly where the arrangement or location of the door opening makes a swinging or a sliding door inadvisable. They conserve floor area which may be necessary for aisle or storage space inside or platform space outside. On the other hand, they necessitate head room above the opening equal to at least one-half the door height. When designed with two leaves, the lower slides upward inside the upper and both leaves clear the head of the door when open. If designed with one leaf, head room equal to the full height of the door is demanded.



Vertical Lift Doors

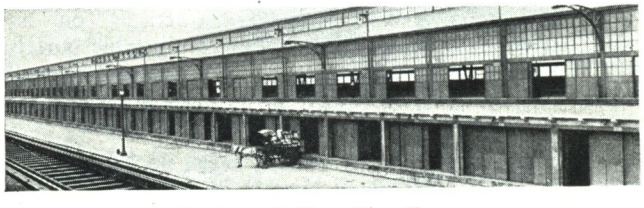
The photograph shows one of twenty single leaf, Vertical Lift Fenestra Doors in the plant of the Detroit Seamless Steel Tube Co. These doors were operated by a worm and gear device connected by means of a steel shaft to pulleys over which the doors were balanced against counterweights.

PIER AND WAREHOUSE DOORS



Warehouse Doors with Pilot Door

Both swinging and sliding types are entirely suitable for piers, warehouses and shipping or receiving sheds. Stock types can be shipped immediately from warehouse. Special types are designed to any practical width or height. Swing doors may be equipped with pilot doors if desired. Sliding doors may be arranged with any number of leaves to the opening.

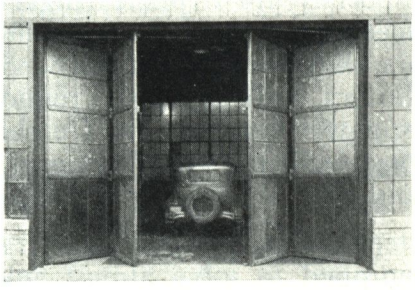


Fenestra Rolling Pier Doors

FENESTRA GARAGE DOORS

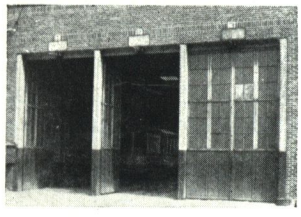
For public garages, bus terminals and motor repair shops, Fenestra doors, either double swinging or accordion type, supply a wide, high opening with ample clearance for cars or trucks. Either type may be arranged to open in or out, manually operated or electrically connected to a push button station.

Of tubular construction and heavily reinforced, these doors are built for hard and constant usage. When equipped with specially designed, quick acting operator mechanism, they are peculiarly adapted to fire and police stations.



Garage Doors

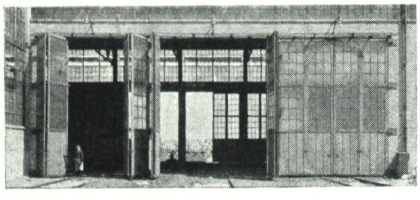
Doors of similar design, but of unusual height to accommodate trolley poles, are recommended for electric railway car barns.



In a Car Barn

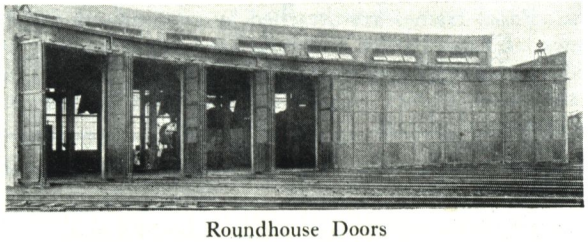
FENESTRA ACCORDION DOORS

Fenestra Accordion Doors are designed for roundhouses and buildings of that nature that require extra large door openings. Fenestra Accordion Doors are similar in appearance and construction to the Airplane Hangar Doors, but are suspended by trolley hangers which hold the doors true to line and guide them as they are opened.



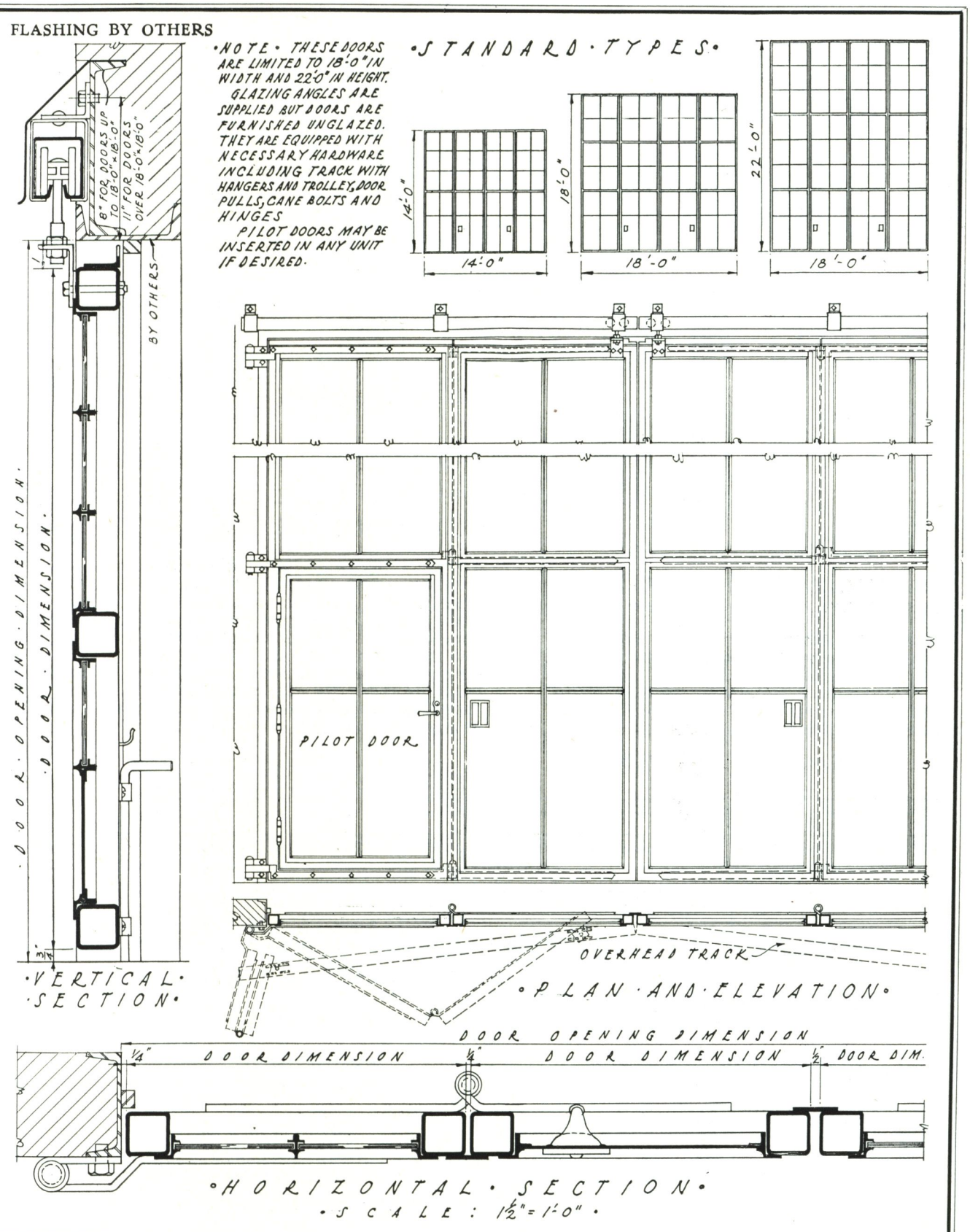
Accordion Doors

The jamb hinges consist of straps made of heavy steel. The double eye pintle has a large steel pin. Pilot doors can be installed where desired and are constructed of 2½ x 2½ in. tubular trim. Pilot doors are equipped with cylinder locks while main doors are fitted with hasp and staple so they can be locked with padlock. On small openings, doors may be made of channel type construction, and channel type pilot doors are used.



Roundhouse Doors

Continued on next page



Fenestra, August 1929	Accordion Doors Elevations and Details	Plate No Y-301

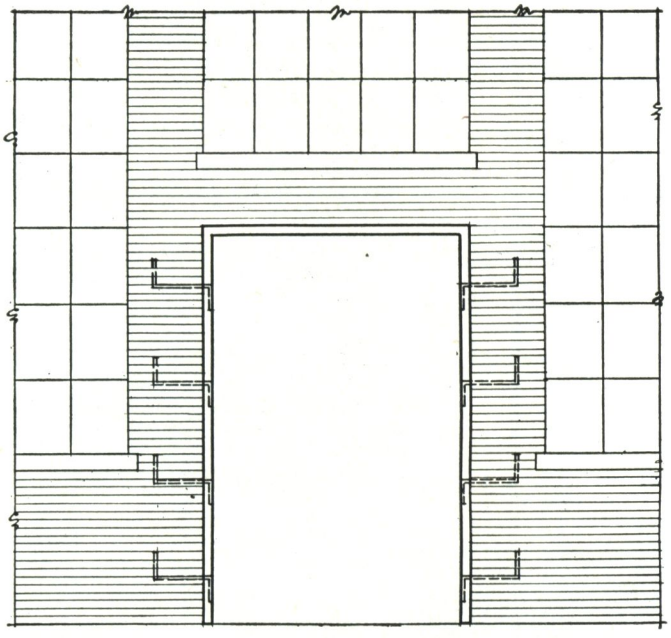
Continued on next page

• STANDARD • AND • STOCK • TYPES •

TYPES SHOWN SHADED ARE CARRIED IN STOCK

NOTE - THE ABOVE UNITS WILL BE MADE WITH CHANNEL TRIM AND CAN BE USED FOR EITHER SWING OR SLIDING DOORS.

DIMENSIONS SHOWN ARE OVERALL DOOR SIZES WITH OPENING CLEARANCES DEDUCTED. FOR CLEARANCES SEE PLATE NO. V-102.

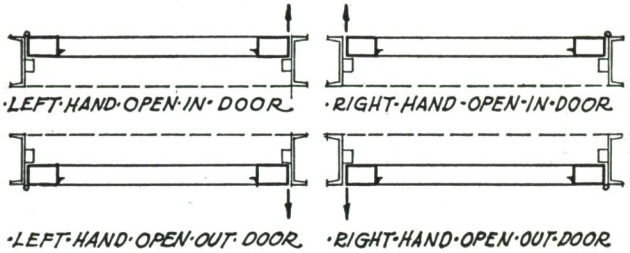


• ELEVATION • OF • TYPICAL • DOOR • FRAME •

NOTE - STANDARD DOOR FRAMES FOR SWING DOORS ONLY ARE MADE OF 4" STRUCTURAL STEEL CHANNEL AND ARE EQUIPPED WITH HEAVY ZEE ANCHORS ON EACH SIDE SPACED ABOUT 2'-0" ON CENTERS TO ANCHOR FRAME INTO THE MASONRY. HOLES IN FRAME FOR HINGES ARE DRILLED AND TAPPED IN SHOP TO MATCH DOORS.

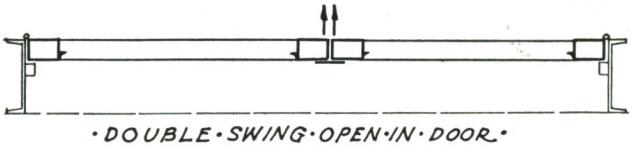
FRAMES FOR SINGLE DOORS ARE SHIPPED ASSEMBLED, USING AN ANGLE TIE ACROSS THE BOTTOM. FRAMES FOR DOUBLE DOORS ARE SHIPPED KNOCKED DOWN AND MUST BE BOLTED TOGETHER IN FIELD.

• SWING • DOORS •

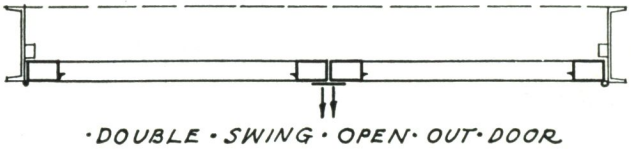


• LEFT • HAND • OPEN • IN • DOOR • RIGHT • HAND • OPEN • IN • DOOR •

• LEFT • HAND • OPEN • OUT • DOOR • RIGHT • HAND • OPEN • OUT • DOOR •

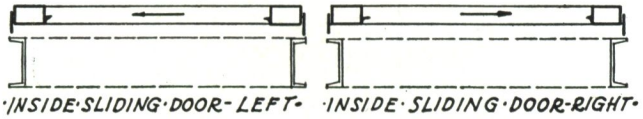


• DOUBLE • SWING • OPEN • IN • DOOR •



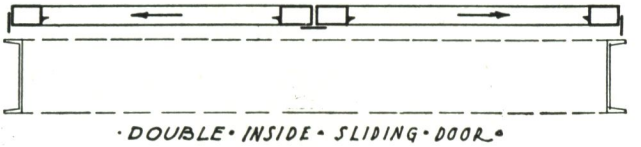
• DOUBLE • SWING • OPEN • OUT • DOOR •

• SLIDING • DOORS •

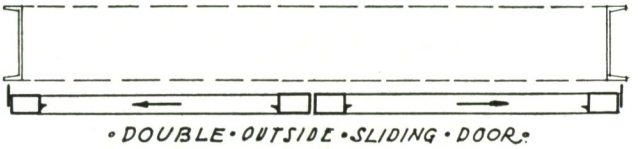


• INSIDE • SLIDING • DOOR - LEFT • INSIDE • SLIDING • DOOR - RIGHT •

• OUTSIDE • SLIDING • DOOR • LEFT • OUTSIDE • SLIDING • DOOR • RIGHT •



• DOUBLE • INSIDE • SLIDING • DOOR •

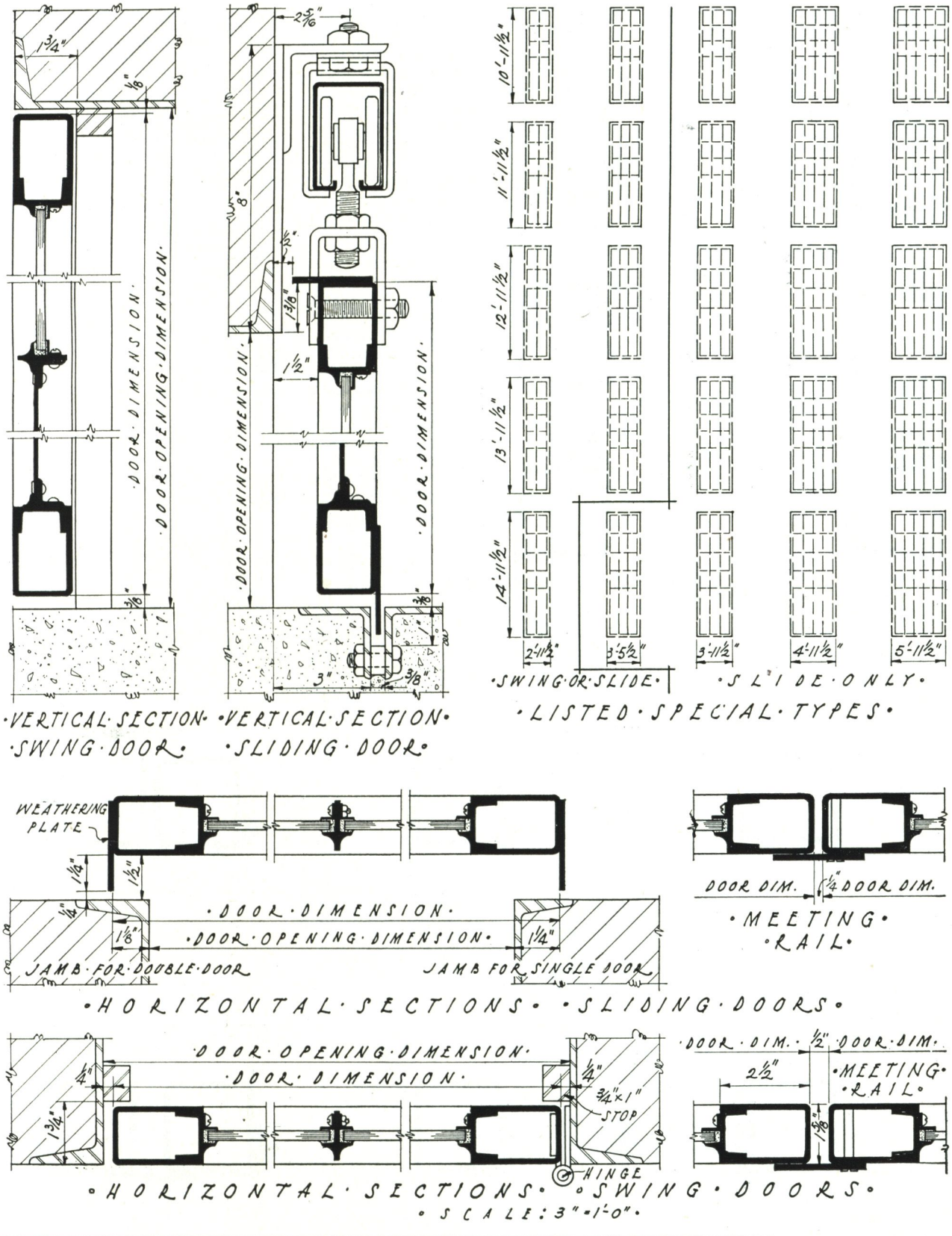


• DOUBLE • OUTSIDE • SLIDING • DOOR •

• D E S I G N A T I O N • O F • D O O R S •

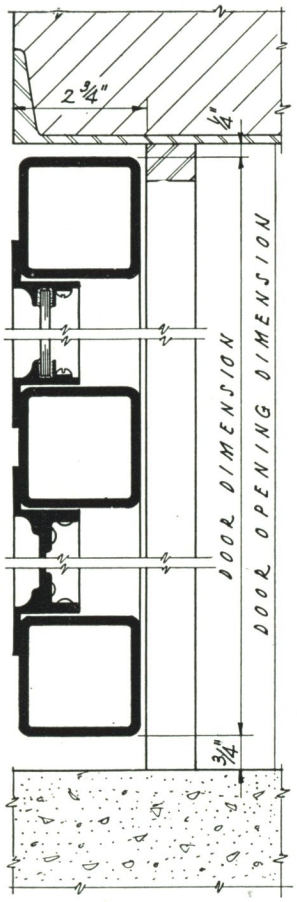
Fenestra, August 1929	Swinging and Sliding Doors Types, Sizes and Handing	Plate No Y-401

Continued on next page

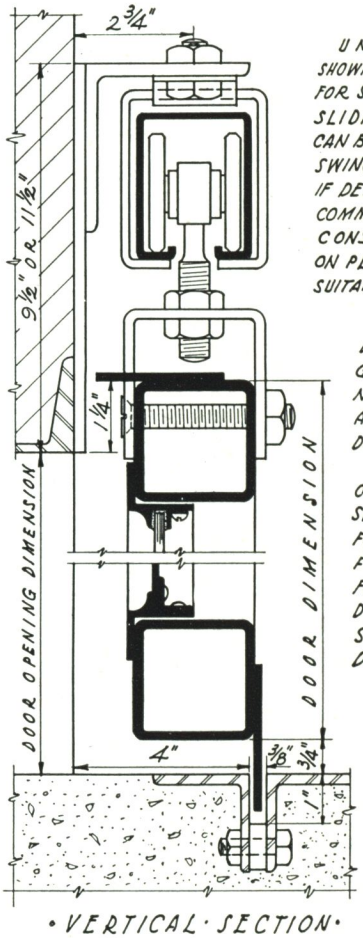


Fenestra, August 1929	Swinging and Sliding Doors Typical Channel Doors	Plate No Y-402

Continued on next page



•VERTICAL·SECTION•
•SWING·DOOR•

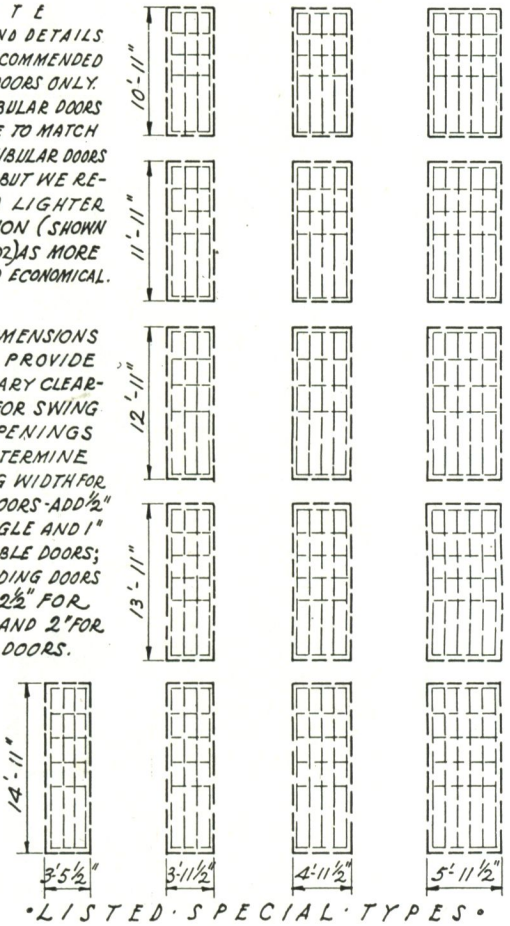


•VERTICAL·SECTION•
•SLIDING·DOOR•

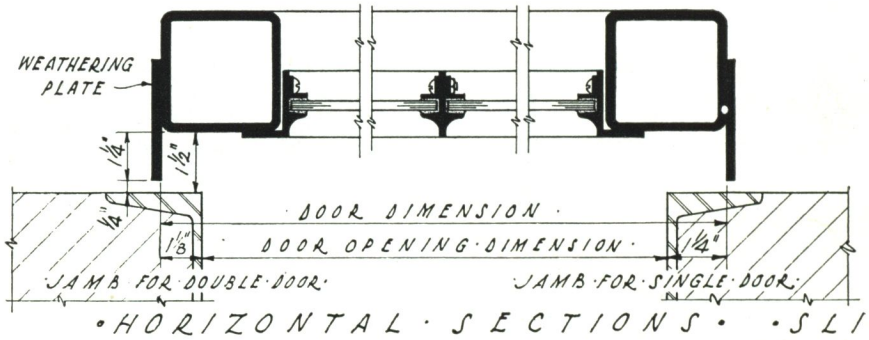
NOTE

UNITS AND DETAILS SHOWN ARE RECOMMENDED FOR SWING DOORS ONLY. SLIDING TUBULAR DOORS CAN BE MADE TO MATCH SWINGING TUBULAR DOORS IF DESIRED BUT WE RECOMMEND A LIGHTER CONSTRUCTION (SHOWN ON PLATE V-102) AS MORE SUITABLE AND ECONOMICAL.

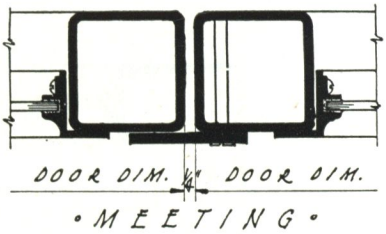
DOOR DIMENSIONS GIVEN PROVIDE NECESSARY CLEARANCES FOR SWING DOOR OPENINGS TO DETERMINE OPENING WIDTH FOR SWING DOORS - ADD ½" FOR SINGLE AND 1" FOR DOUBLE DOORS; FOR SLIDING DOORS DEDUCT 2½" FOR SINGLE AND 2" FOR DOUBLE DOORS.



•LISTED·SPECIAL·TYPES•

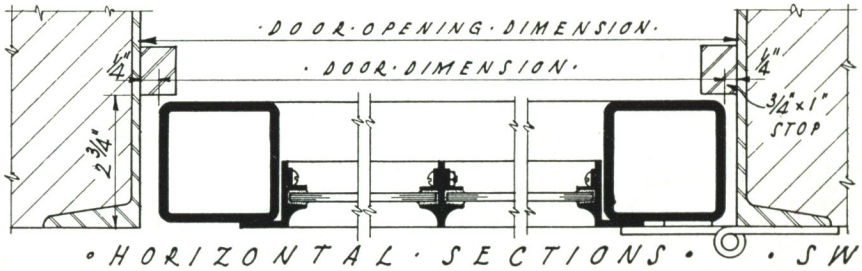


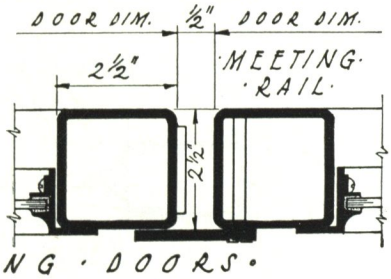
•HORIZONTAL·SECTIONS•



•MEETING•
•RAIL•

•SLIDING·DOORS•





•HORIZONTAL·SECTIONS•

•SWING·DOORS•

• SCALE: 3"-1'-0"

Fenestra *August 1929*	*Swinging and Sliding Doors* *Typical Tubular Doors*	***Plate No*** *Y-403*

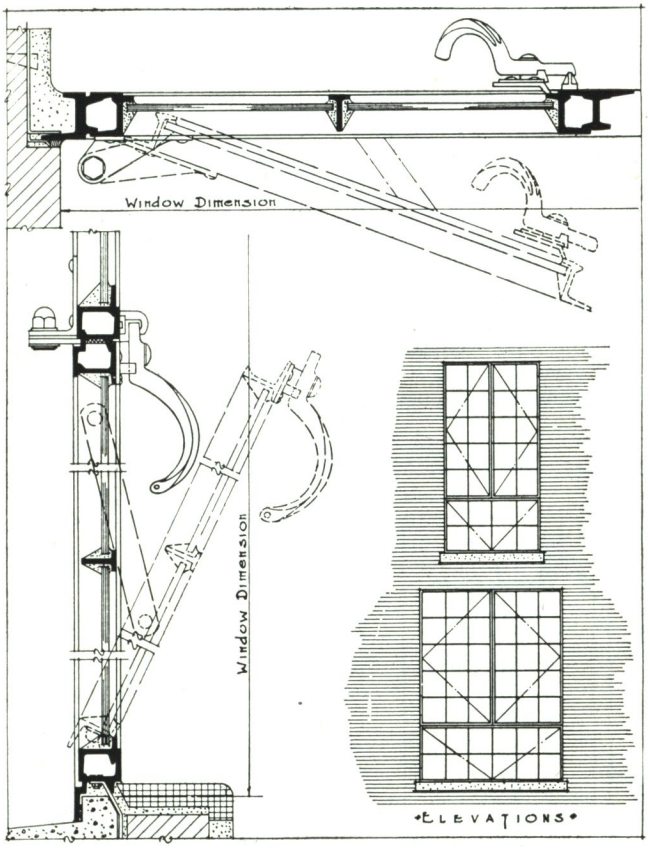
Continued on next page

FENESTRA DETENTION WINDOWS

Fenestra Detention Windows are designed to act as combination steel windows and steel gratings in prisons, asylums, hospitals and reform schools. While they are not offered as substitutes for prison bars in all cases, they do insure a very large measure of restraint coupled with the advantages of a weather-tight, fire-resisting window.

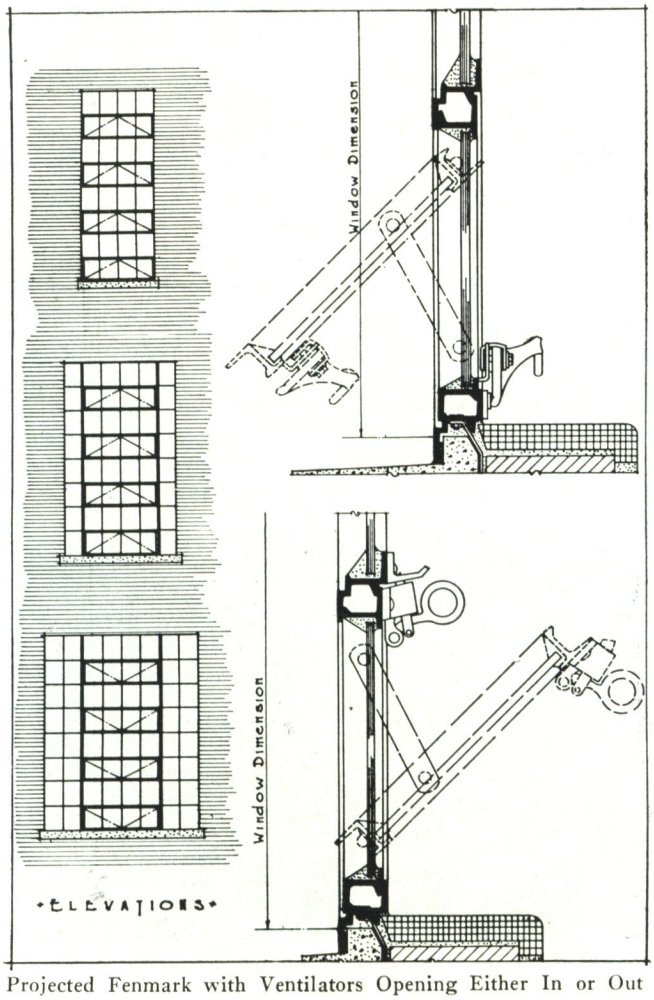
Fenestra Detention Windows are designed in a number of different types with swing leaves or ventilators opening out or opening in, but all types embody the use of comparatively small glass lights, usually about 6″ by 9″. Fenestra Fenmark Windows are available for detention purposes with both swing leaves and sill ventilators limited as to opening. The width of the aperatures is restricted by means of steel arms, held by screws. For washing, these screws may be released by means of a specially designed wrench.

Fenestra Projected Fenmark Windows may be used with ventilators either one pane high or two panes high and operated either individually by hand or mechanically in banks. Ventilators may be arranged to open either in or out and it is possible to have some ventilators opening in and some opening out in the same unit. Any of these ventilators may be provided with stops to limit the degree of opening or they may be locked shut to be opened only by means of a special key.

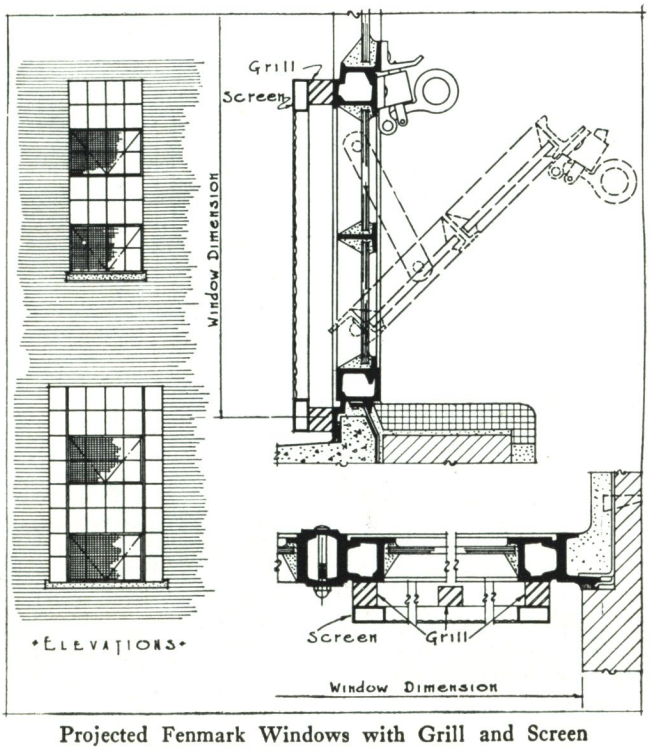


Fenestra Fenmark Windows with Restricted Opening

When two pane high ventilators are used, it is usually necessary to provide a type which embodies a steel grill



Projected Fenmark with Ventilators Opening Either In or Out



Projected Fenmark Windows with Grill and Screen

Continued on next page

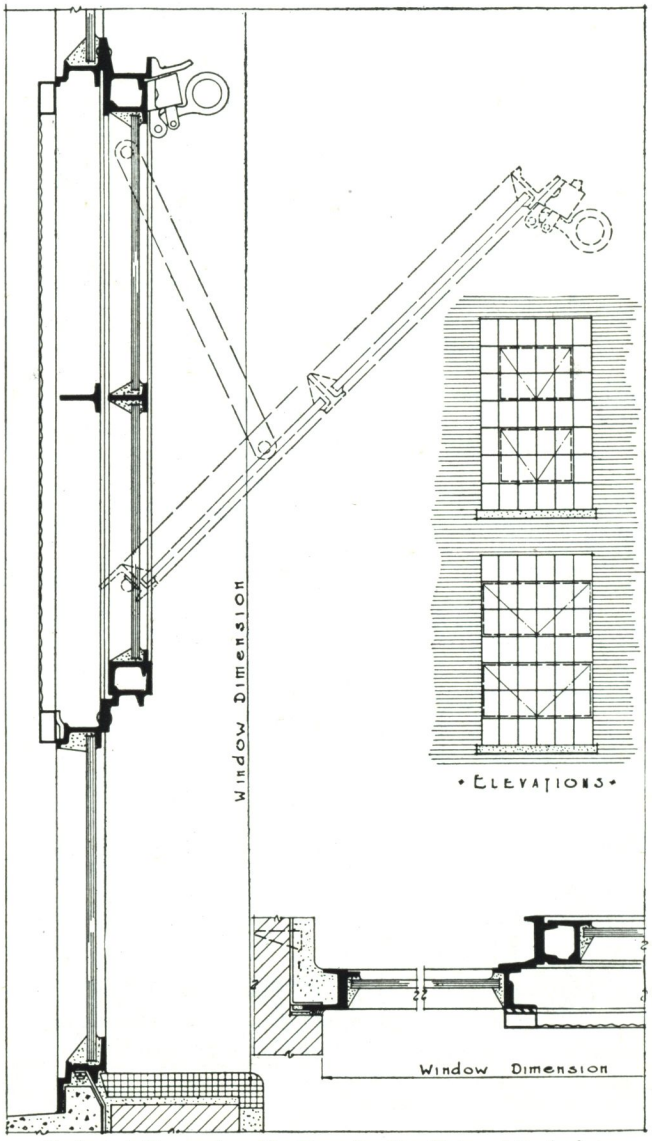
on the outside. If desired, this grill may be combined with a screen so that the restriction is less apparent.

Still another Fenestra Projected Fenmark type is designed with a two pane, open in ventilator attached inside a fixed window. In this case, the portion of the window immediately in front of the ventilator remains unglazed and acts as a steel grill.

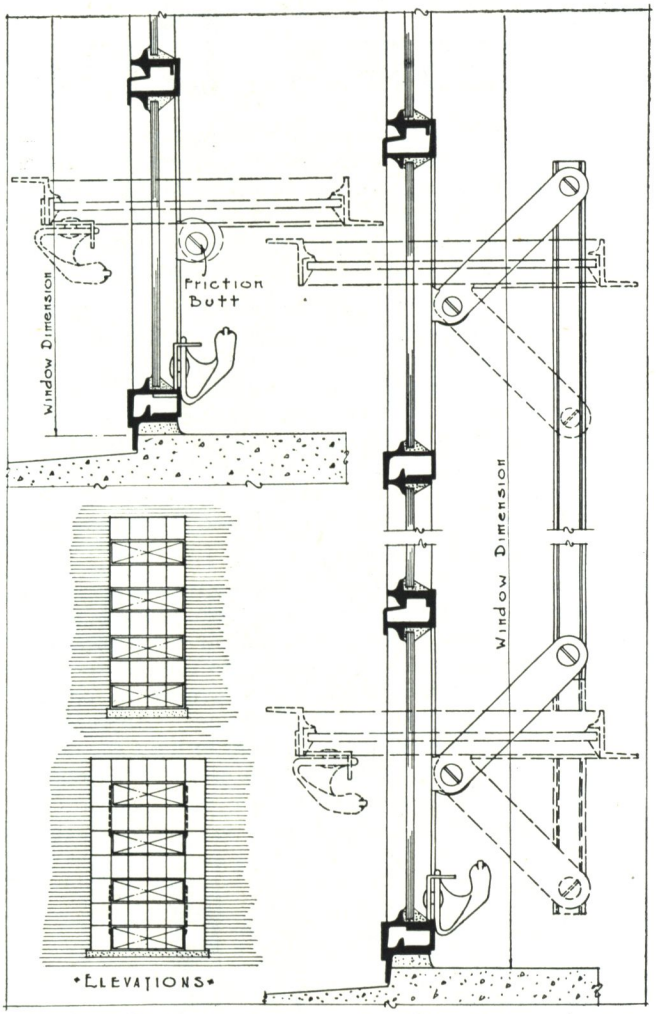
Fenestra Horizontally Pivoted Windows one pane high may be used with ventilators operated either by hand or mechanically. Upper ventilators may be operated simultaneously with lower ventilators by the use of extension butts and connecting bars. Large ventilators may be provided with stops to limit the extent of their opening or they may be locked shut and opened only by means of special keys.

Horizontally Pivoted Windows may also be provided with friction butts located at the center, each ventilator being individually operated by hand.

Frequently, Fenestra fixed light units are used unglazed and set into the walls as gratings outside movable wood windows. Glazed fixed panels of Fenestra are also set into movable wood sash.

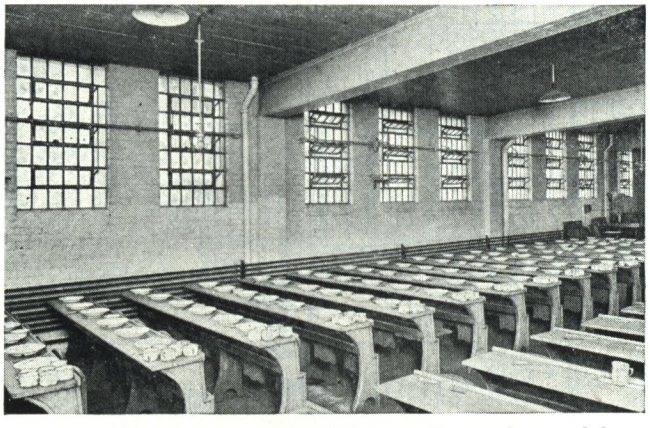


Projected Fenmark with Open-In Ventilator Attached to Fixed Sash



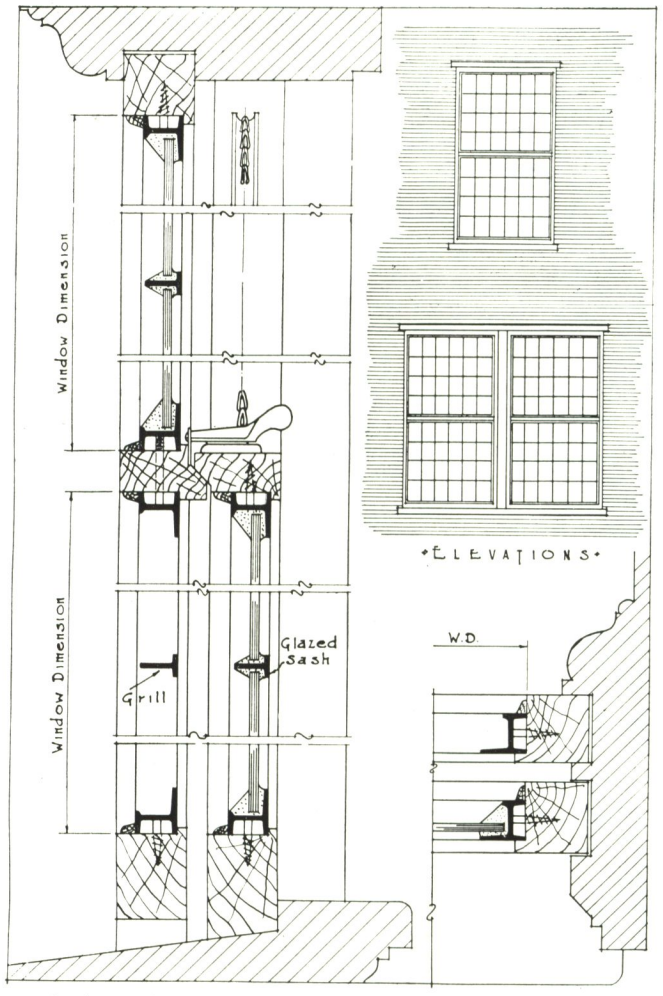
Horizontally Pivoted Fenestra with Friction Butts and same with Connecting Arms

Since no types or sizes of Fenestra Detention Windows have been standardized, a wide variety of window and ventilator arrangements is possible to suit the needs of practically any type of institution. Fenestra Sales Engineers will be glad to co-operate with architects and designers in selecting the most efficient types.



Detroit House of Correction—All Ventilators Operated in Unison by One Operator

Continued on next page

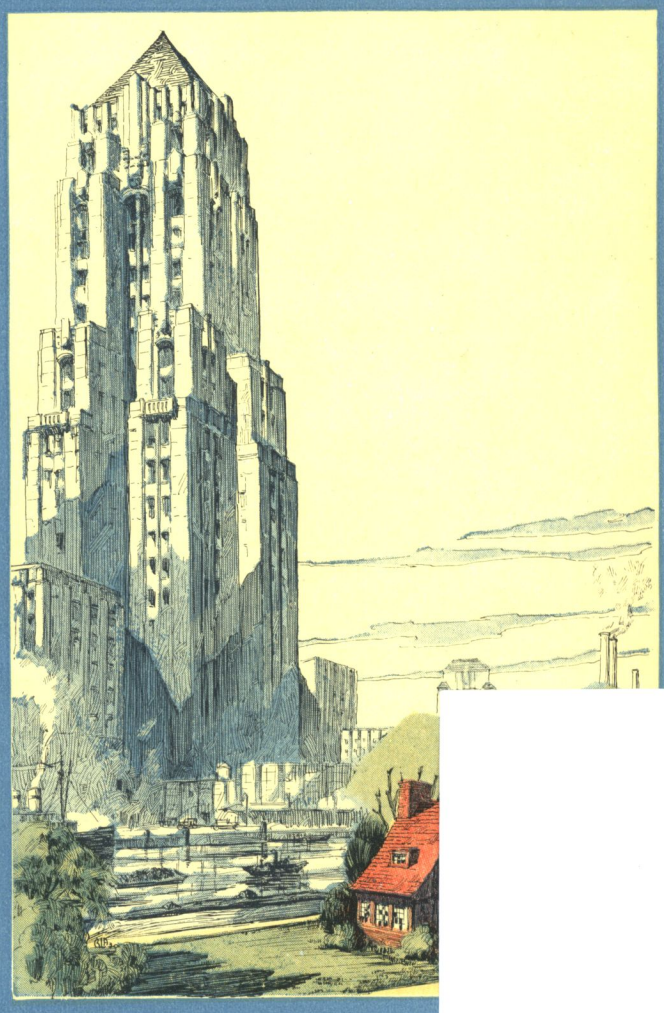


Fixed Panels of Fenestra Used with Movable Wood Frames

TYPICAL DETENTION INSTALLATIONS

South Highland Infirmary, Birmingham, Ala.
State Prison Farm, Raiford, Fla.
State Reformatory, Anamosa, Ia.
Illinois State Penitentiary, Lockport, Ill.
E. Indiana Hospital for Insane, Richmond, Ind.
Kansas State Hospital, Osawatonie, Kan.
Central State Hospital, Lakeland, Ky.
Onondaga County Penitentiary, Jamesville, N. Y.
Utica State Hospital, Mary, New York
Erie County Penitentiary, Wende, N. Y.
Wingdale Prison, Wingdale, N. Y.
U. S. Veterans' Hospital, Perrysville, Md.
Detroit House of Correction, Detroit, Mich.
Michigan Sanitarium, Howell, Mich.
Michigan State Prison, Jackson, Mich.
Michigan Home for Feeble Minded, Lapeer, Mich.
Saginaw Hospital, Saginaw, Mich.
Michigan Insane Asylum, Traverse City, Mich.
State Reformatory, St. Cloud, Minn.
Oklahoma State Reformatory, Granite, Okla
E. Oregon Insane Asylum, Pendleton, Ore.
Industrial Schools for Girls, Salem, Ore.
Oregon State Asylum, Salem, Ore.
Eastern State Penitentiary, Greaterford, Pa.
State Institute for Feeble Minded, Polk, Pa.
State Hospital for Insane, Columbia, S. C.
Central Hospital for Insane, Nashville, Tenn.
Texas State Insane Asylum, Austin, Tex.
Wisconsin State Prison, Waupun, Wis.
Northern Insane Hospital, Norlum, Wash.
U. S. Penitentiary, McNeil's Island, Wash.
State Penitentiary, Walla Walla, Wash.
Coquitam Asylum, Vancouver, B. C., Canada

Erie County Pentitentiary, Wende, N. Y.—Each Horizontal Row of One-pane-high Ventilators Is Opened and Closed by a Mechanical Operator



Fe

BLUE

STEEL

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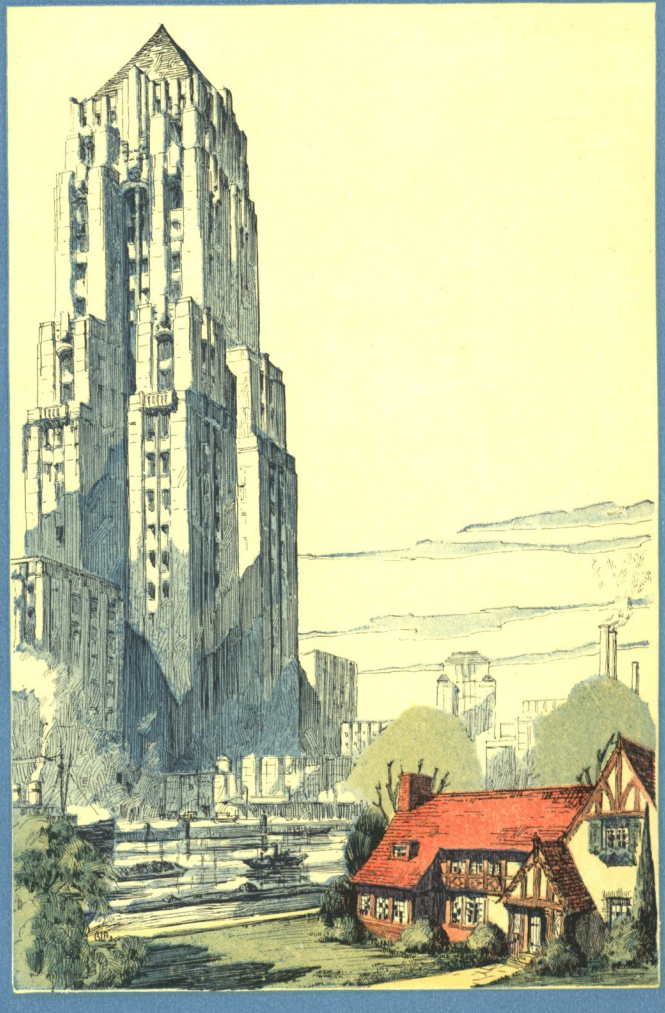

Fenestra

BLUE BOOK OF STEEL WINDOWS